YACHTING

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LOWERING THE FIRST BOAT TO BOARD A DERELICT.

Clearing the Seas of Derelicts

By JOHN HARNO

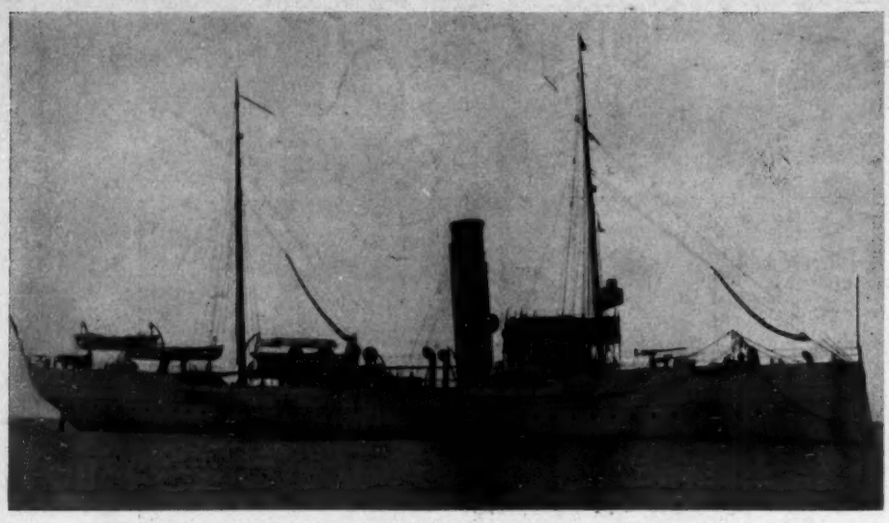
ILLUSTRATIONS BY EDWIN LEVICK AND THE AUTHOR

THE destruction of a vessel at sea by collision with ice and attended by appalling loss of life is too vividly fresh in the public mind to need recalling; and yet how many of those who have occasion to travel upon the ocean realize how frequently obstructions almost as dangerous as ice are being reported by shipmasters who have sighted them at sea, low-lying and difficult to detect? These menaces are derelict vessels, abandoned at sea and carried by the ocean currents and prevailing winds through many miles of wanderings until they are either destroyed by a revenue cutter, go to pieces under the buffeting of the seas, or finally sink after weathering many a gale.

Derelicts have a certain degree of fascination for those who go down to the sea in ships, and with the knowledge of the presence of one of these pests of the sea somewhere near the course of a ship there comes keen anxiety to her officers until all danger of collision with it is past. To change the course during the night, or in thick weather, to avoid a certain suspected locality is useless because in a day's time the derelict may have traveled several miles, and in a direction contrary to expectation.

Every sailor knows with what care a lookout is kept for vessels under control, especially in thick weather and with fog signals serving as a safeguard against collision; but what safeguard is possible, even on clear nights and much less in thick weather, when approaching a heavy hulk just awash, and which gives no sign of its dire presence?

How many vessels have gone to the bottom with all on board through striking derelicts will never be known, but the large number of missing ships, and the practical certainty that some at least were lost in this way caused the United States Government to take active measures to rid the ocean of these floating hulks. To that end the vessels of the navy were first utilized, but later the work of locating and destroying them was turned over to the revenue cutter service, and finally Congress authorized the construction of the derelict destroyer Seneca, to be officered, manned and operated by the latter service. From the time this ship first went into commission she has done most excel-

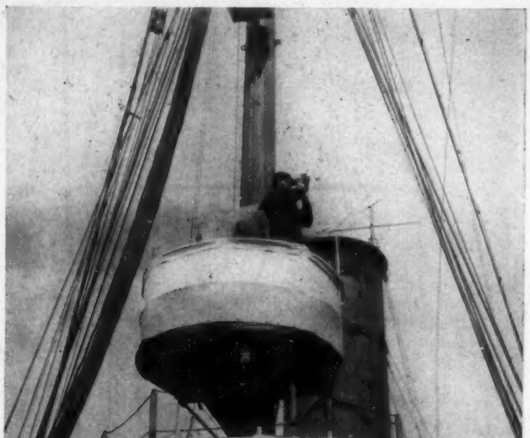


THE REVENUE CUTTER MOHAWK, OFTEN USED AS A DERELICT DESTROYER.

lent work in her special field of activity.

But, in addition to the Seneca, every revenue cutter of the first class is charged with keeping its cruising district clear of derelicts and other menaces to navigation and all of them are thoroughly equipped for the work. They are especially charged during the winter months to be vigilant in this respect and they may be given hurried orders to proceed on a distant off shore cruise to intercept and destroy a derelict recently reported by some shipmaster.

Only those to whom is intrusted the duty of destroying derelicts fully realize the difficulties of the work. Some definite method must be used to locate them, for a derelict is as difficult to find as a needle in a hay stack. However, several methods have been developed that have proved very successful under certain conditions, and the officers of the revenue cutter service are continually at work in an effort to solve the problem of successfully locating an abandoned and drifting derelict.



ON THE LOOKOUT FOR A DERELICT.

The limits of this article preclude the possibility of going into the technical details of the methods employed, but it may be mentioned in passing that the principal methods of search now employed are:—the rectangular method; that of cruising a suspected area by a series of concentric squares from the last known position of the derelict, and that of cruising in a spiral about the origin.

The consensus of opinion is, however, that valuable time is lost in searching a large area, and when coal is a factor to be considered neither of these methods should be attempted unless the origin be *first* approached. Even then they are of but doubtful efficiency except where searching for the vague position of some stranded wreck.

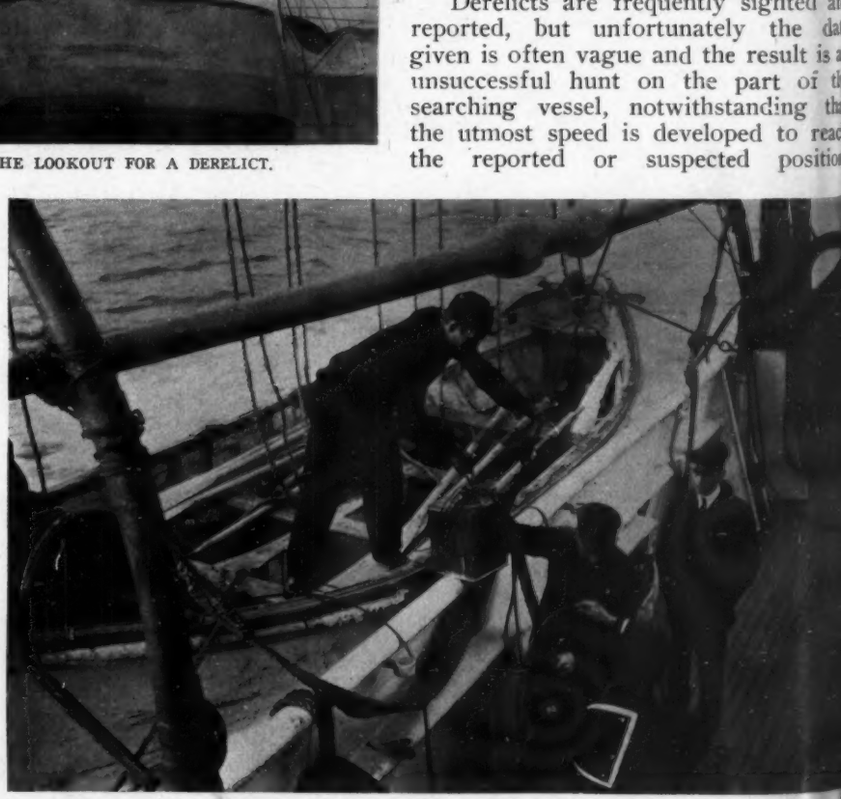
Another, and an excellent method, where the drift of the derelict is known, is to go to the point of origin and then cruise a series of partial rectangles in a line represented by the derelict's drift, lengthening the rectangles laterally as you recede from the origin. This is called the sector method, where a linear distance of 100 miles along the bisector of a 90-degree sector requires a cruising distance of 640 nautical miles; and, although during the night, when the cutter is hove to, she may not be drifting at the same r as the derelict, she is nevertheless drifting in the sa direction, consequently the outlook is not so couraging as it would appear.

In all searching, where the sector or rectangu methods are used, the cruising lines are at a dista apart equal to twice the range of vision at a hei of 60 feet. In case of thick or rainy weather, distance between the cruising tracks is lessened, it is always well to avoid this, if possible, because consumption is a factor to be considered.

Derelicts in the North Atlantic are commo found in the Gulf Stream and, cruising along with they sometimes sail thousands of miles, constituti a menace at all times, but in that part of the Stre south of Newfoundland they are directly in the pa of the transatlantic liners. Sometimes they get i the branch and counter currents of the Gulf Strea in the counter current along our coast and ther south to the Sargasso Sea, while a few have be known to drift counter to the Stream but these cases are very rare. The cu rent charts will show that it is possib under some circumstances, for a derel to complete a circuit of the ocean, and case is on record where a derel schooner remained afloat for a period 850 days, during which time she cruis a distance of 7,025 miles.

Thus winds, currents, the amount freeboard shown and the condition the vessel (whether bottom up, or othe wise, whether masts are standing a any sails set), together with the gener condition of the hull and of its materi are important factors to be considered determining the rate of drift of a der lict, its position in the current and pro able course, so that it may be overtak and destroyed.

Derelicts are frequently sighted a reported, but unfortunately the da given is often vague and the result is unsuccessful hunt on the part of th searching vessel, notwithstanding th the utmost speed is developed to reac the reported or suspected positio



PLACING THE GUN-COTTON MINES IN THE BOATS.

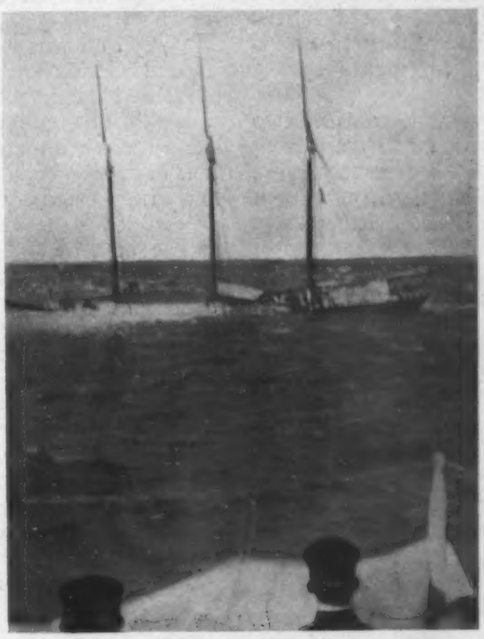
Therefore those sighting derelicts should send the most complete report at the earliest moment by wireless, if so equipped, or by signal to the first ship met carrying wireless, to be transmitted to the nearest hydrographic office or to Washington, in order that a cutter may be immediately dispatched on her quest with data that can be worked from.

The method of the disposal of derelicts, when found, is determined by their condition. When possible they are towed to the nearest port, but when this is not practicable they are destroyed either by blowing up or by fire, the latter being a most excellent method if it is possible to use it because a vessel in ballast will surely sink if burned to the water's edge. A badly water logged derelict, however, is almost impossible to destroy by fire. Sometimes it is necessary to resort first to fire and then complete the work with explosives.

The best way that a comprehensive idea of the work of derelict destroying can be had is by observing from the deck of a destroyer the actual operations necessary in running down and destroying an abandoned hulk.

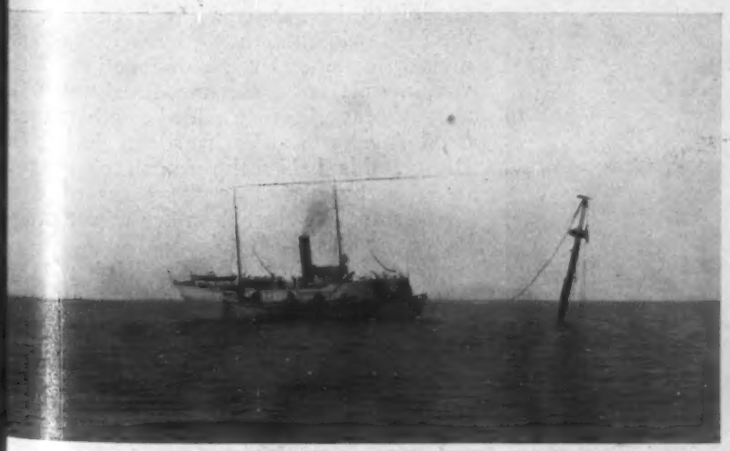
Towards the end of last March, the United States revenue cutter Mohawk, on the New York station, received telegraphic orders to destroy a sunken two-masted schooner constituting a serious menace to navigation off Hereford Inlet, New Jersey, and situated just inside the three-mile limit.

Ordinarily, upon discovering a derelict a cutter would promptly proceed to remove it, but the army has jurisdiction within the three-mile limit, consequently a report must first go to Washington and a request come from the War Department for a revenue cutter to destroy an obstruction before she can begin operations. This is because it sometimes happens that obstructions exist in the vicinity of Government construction work under the charge of army engineers, in which case the latter remove it, if practicable. Upon receiving her orders the cutter left port and headed south at a speed of 12 knots so as to arrive at the position before dark in order to complete the mining operations that day. During the run an opportunity was afforded to observe the routine on board from "washing down" to "afternoon quarters."



A SODDEN HULK FLAILING ALONG IN THE GULF STREAM.

The first thing that was noticeable was that work was carried on with a snap that would appeal to an observer, no matter how uninitiated, and which was apparently the result of perfect military discipline. Nowhere was the efficiency better shown than at the collision, fire and "abandon ship" drills. The elapsed times taken from the sounding of the general alarm showed that the heavy collision mat was in place over the under plating, and collision bulkheads closed in three minutes; that all fire apparatus, consisting of six streams of water, was working in 28 seconds, while every boat was "provided" and ready for lowering with their respective crews mustered abreast of them in two minutes and a half.



A BOAT FROM THE MOHAWK PLANTING MINES IN THE WRECK

PLANTING THE MINES OVER A SUNKEN WRECK AT SEA.

At the "abandon ship" drill, when the boats were ready for lowering, each contained (besides the supply box, which holds tools, canvas, nails, coston signals, zinc and numerous other articles) ample provisions and water, lanterns, oil, rifles and ammunition, charts and instruments, medical supplies, signal flags, sails, etc.

This was the result of incessant drill, and it would be wise if the laws governing the merchant marine were such as to demand that equal efficiency be shown on passenger vessels as is found on vessels of this service.

An interior inspection of the ship showed everything to be in first-class order, but it was rather disquieting for a guest to be informed that in the quarters of the commanding officer there are stowed away numerous boxes containing jars of dry gun-cotton, while here and there, at safe distance from each other, are red canisters containing electric detonators of fulminate of mercury, probably as explosive a substance as one cares to handle. They are placed here because the regulations forbid of their being stored below. Besides these, the ship's magazines, shell and ammunition rooms which do not contain the ordinary ordnance stores are filled with wrecking mines.

On approaching the position of the sunken obstruction, an opportunity was afforded to see how these mines, etc., were prepared for use.

Six mines were to be used on this wreck and each consisted of a sheet copper case, 12⅜ inches long and 9 inches square, which is the receptacle for the explosives and primer case. The primer case, also of copper, fitting inside the other case, is 8⅛ inches long by 3 inches square inside and is closed at one end. Around the filling hole at the top of the large case is soldered a brass ring with a flange threaded for the reception of a brass cover.

Assembled, the flange of the primer case seats on a rubber washer inside of the flange of the brass ring. The screw cover screws down over a rubber washer over the primer case flange, thus making a water-tight joint. A boss on the center of the cover plate provides a screw seat for a cap and a peculiarly

EXPLODING THE MINES.

FLOATING DEBRIS AFTER THE EXPLOSION.

shaped stuffing-box is formed in it by the insertion of a rubber ball drilled through in two places to receive the leading-in wires.

The large case is filled to about the center with eight piles of six cakes each of wet gun-cotton, making a total of 48 wet blocks, and to these are added two wet blocks placed in the center under the bottom of the primer case, making in all 50 blocks of wet gun-cotton. The blocks are 2.9 inches by 2.9 inches by 2 inches in size.

Between the piles of blocks on the sides, and over the two blocks in the center the primer case is inserted, its flange resting on the washer inside the brass cover ring. This case contains a single pile of four dry gun-cotton blocks, each block bored out in the centre so that a continuous central channel leads from the top to the bottom of the pile. The detonator, a fulminate of mercury electric exploder, is inserted in this channel and its wires are spliced to the leading-in wires so that the splice will be inside the case, the leading-in wires having first been led through the holes in the ball packing. The cover cap confines the ball, compresses it, and makes a water-tight joint about the leading-in wires. The mine loaded weighs from 50 to 60 pounds.

A form of Farmer's machine, a small, handy but powerful magneto, is used for firing the mines, and a standard insulated cable is used in connection with it.

Expecting that the wreck of the schooner would be resting on bottom, the mines were connected up in series for distribution about the hull and especially in the vicinity of the base of the masts.

By the time the mines were prepared by the gunner and his assistants, in the presence of the ordnance officer, we were in the vicinity of the wreck and the lookouts and officer of the deck were busy with their glasses looking for the protruding spars; but when the distance had been run and no signs of the wreck were seen the question arose as to what had become of it. A systematic search was immediately instituted and the vessel was started ahead on her first leg. After proceeding four miles the wreck was sighted on the starboard bow, it having been carried that distance to the southward and westward by the heavy seas and strong southerly set of the last few days.

A large reel on which the cable was wound had already been placed in the surfboat; the mines, etc., were now handed in and, when close to the wreck, the vessel was stopped, the boat lowered and with the ordnance officer, gunner and crew on board pulled to the scene of intended operations. As the afternoon was waning work was at once begun on arriving over the wreck, and the boat was secured to one of the spars sticking out of water.

CAPT. F. S. VAN BOSKERCK OF THE REVENUE CUTTER MOHAWK.

Iron hoops, to each of which were attached two mines, were now placed around each mast inside of the rigging, while the remaining mines were made ready to lower over the hull between the spars.

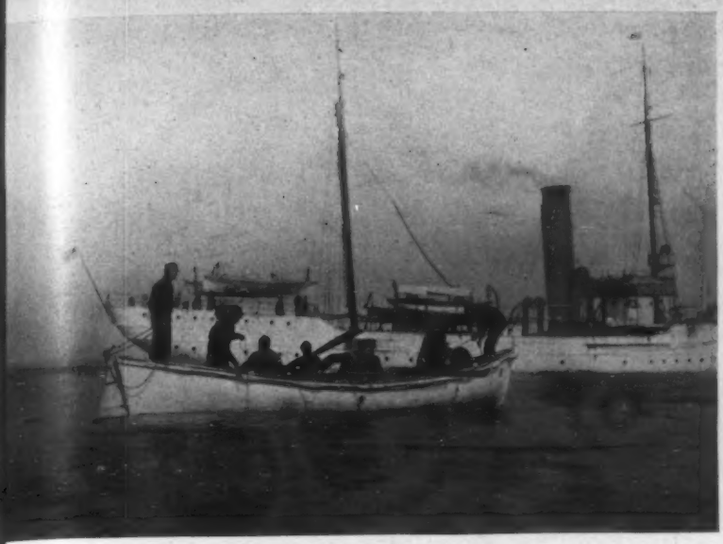
When all was ready the lowering lines were eased away and the mines sank until they came in contact with obstructions that prevented them from going farther. The cable in the meantime was paid out, and when no more would go the boat was slowly backed away, a man paying out cable as it would take, our direction being towards the Mohawk, which had by now swung away to a safe distance.

Suddenly the order "oars!" is given by the officer in charge of the boat and a signalman rapidly semaphores a message to the cutter. As rapidly come a few words in reply, and then the lieutenant in charge sings out "fire!" The gunner touches the magneto and a huge geyser-like column of water, in which are seen pieces of wreckage, rises from the ocean, while the report of the explosion and the shock from the detonation is very perceptible to those in the boat and on the cutter.

As the waters subside no signs of the wreck are discernible except floating debris, and the two masts are bobbing about like buoys, each having been severed into three pieces as though cut by a saw. The surfboat and cutter now return to the scene, where the former immediately runs a line of soundings and the result, "least water seven fathoms," is signalled to the Mohawk, which then anchors near by. The wreck has been completely destroyed and the fairway cleared to navigation.

Now begins the work of removing the debris. The pieces of spars, to some of which rigging is attached, are taken on board the cutter, as are such other pieces of wreckage as are deemed dangerous if allowed to float, while the smaller pieces are left to drift away with the current, and the Mohawk, announcing by wireless to the division commander the destruction of the wreck, sails for Delaware Breakwater for an anchorage, having added another to the good days' work she has done during the winter, this being the fourth obstruction removed by her from the paths of commerce since she started on her winter cruise December first.

The following day the Mohawk resumed her regular cruising for the assistance of vessels in distress, to remain actively at work until the end of the winter. With the end of the winter cruising there begins lots of other work for the ship in enforcing the U. S. laws, patrolling regatta courses and being all the while keenly alert



SOUNDING OVER THE WRECK AFTER BLOWING HER UP.

GETTING OUT THE COLLISION MAT ON FORECASTLE HEAD OF THE MOHAWK.

for any vessel that may be in distress or in need of her aid.

When opportunity affords, her crew must take the prescribed course on the rifle range, and target practice with her battery must receive attention, so that she, as are all of the other cutters, is quite a busy craft, to the end that the revenue cutter service may be a useful one, officered by technical men educated from their cadet days for their life work, and that the crews of the ships may be second to none in the country in efficiency and discipline.

Many is the shipmaster and owner who has cause for gratitude to the government for maintaining this service, the personnel of which from Eastport, Maine, to the Behring Sea and in the distant waters of our insular possessions, has constantly before it the motto of the service "Always Ready," which is lived up to every day in every year.

Some Pertinent Advice to Ocean Racers

Being Certain Maxims for Those Who Go Down to the Sea in Motor Boats

By "DOC"

DON'T be afraid of the dark, it won't bite, and remember that you will only be in it from about 8 P. M. until 3 A. M., seven hours of darkness all told. Go to sleep if you are timid and let those who are called damn fools and crazy take charge.

Try your log and learn to trust it, and for goodness sake get a compass that will not jump from four to six points on every roll of your ship—nothing less than six inches diameter of card should be tolerated.

Don't stick your compass alongside of your reverse lever or near iron tiller lines and expect to make good landfalls. If you can't swing ship and get your compass deviation, get somebody to come aboard and adjust it. One committee which handled a big race a short time ago did a wise thing which it would be well for some of the other clubs to follow. They made a deal with a nautical instrument house to adjust all the compasses of the racers before the start, and charged the owners a very small fee for it. I am sure that this was the reason why *all* the yachts had no trouble in picking up *all* the light vessels.

Don't fill out your entry blank when you are sailing the race around the club table with seltzer bottles (and others) as light ships, and then a day or so before the race, send in word, "My engine has the whooping cough," or, "I am afraid my grandmother will die soon."

If you enter a deep-sea race, make all preparations for comfort as far as possible before the start, as these little fellows pitch and roll around some when the sea gets up.

Have some grub all ready made up, have the liquor and ice and water out of the cabin. Don't go below for two or three hours if you are troubled with seasickness. Plan ahead and take care of your crew.

Don't put a man on the lookout for two hours and then put him at the wheel; he will be nearly blind and cannot see the lubber line or steer a good course. At night a two-hour trick at the wheel is enough.

If you have six men and a cook aboard, divide the men into three watches, but don't bother the cook; let him get you good hot grub.

The navigation is easy if you watch sharp to pick up the next light after leaving one astern.

A little common sense, a lead line, a log and a compass will get you through even in a fog if you don't get rattled and go hunting the beach.

Go try those delightful off-shore races for cruisers; get sick, let go overside and get back on the job. Pick out men you know will stick; go out there and see what the fellows who tend the Five Fathom Bank and Fenwick Island lightships have to live for, and hear their hearty call to you as you pass and give your number. The whole game has hide-and-seek skinned a mile. Poker can't touch it, neither can bid pinochle.

"Where is Overfalls lightship?"

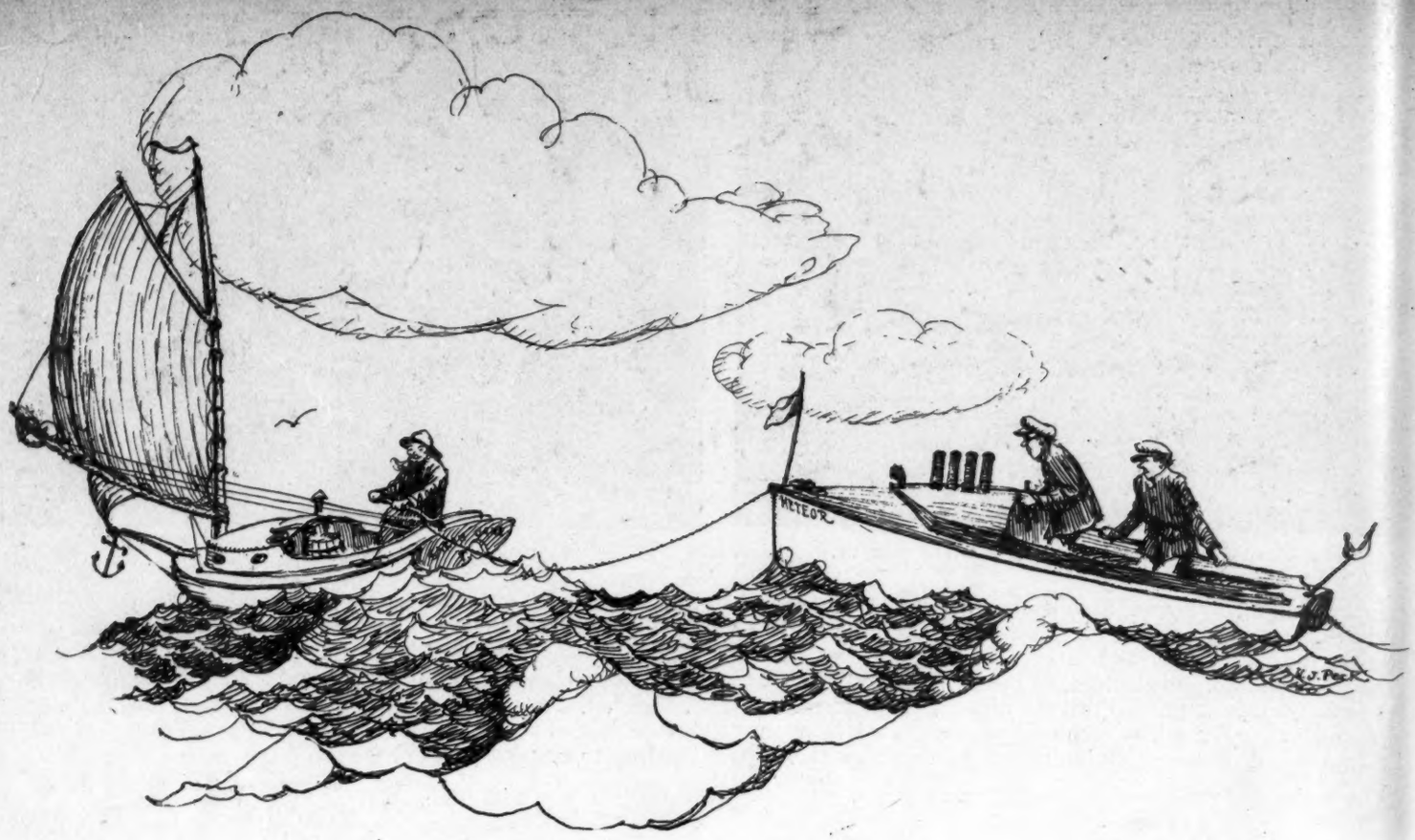
Take your chart, you land lubber, and show the fellow who asks that question, but also tell him, "I've been around Overfalls in my 40-foot power boat."

I have had a dozen men tell me that this kind of racing was not what was wanted. "What you should do," they said, "is to make a run from the pier out to sea for twenty miles and back, then all of us would go in."

I nearly killed them when I said, "Yes, that would make a fine race if you had the nerve to cross the bar to get the race started."

How are we to make crews for the big long-distance races if these all night outside runs are not made?

Why do you build a 50-footer or a 65-footer if you intend to stay tied up at the club dock or sail up a gutter or sewer? If I was the designer I would insist that a boat over 40 feet should make a race of 100 miles each year before putting a line down.



The Horsepower Boat

By H. J. PECK

ILLUSTRATION BY THE AUTHOR

It was a sixty horse-power boat
That rode the bounding wave.
"Some class! The slickest thing afloat!"
Her owner thus did rave.

He took me with him for a spin
Just for a mile or two;
And shouted at me through the din
"You see what she can do!"

Nay, rather did I hear and feel
The creature's 'complishment.
She struck the waves with trembling keel,
As hurtling on she went.

The owner could not see the sky,
Nor feel the zephyr blow,
He only gazed with straining eye
To see how she could go.

But suddenly a snort or two
She hove, then ceased her roar.
The atmosphere became quite blue.
(Pray do not think *I* swore.)

The owner sparked and cranked and tried
With great mechanic skill,
To coax his pet into her stride.
Heedless she wallowed still.

The sun dropped down behind the sea;
A lobsterman sailed by,
And towed us home in wicked glee.
(The owner's face was wry.)

Good sail and wind-power I demand.
No horse-power boats for me.
Though sweet, my nature could not stand
Their balky tricks at sea.

THE CREW OF A CHESAPEAKE BAY CANOE HIKE OUT TO WINDWARD WHEN SAILING ON THE WIND

The Chesapeake Bay Canoe

An Interesting Craft That Has Remained Unchanged In Shape and Method of Construction for 200 Years. Used for Both Working and Pleasure Purposes

By STUART STEVENS SCOTT

YOU chaps who sail on craft that owe their stability to their keels, and who think you are doing some sailing when the lee rail is well awash, should come to the Chesapeake Bay and try a trip on a racing canoe.

Whenever anyone mentions canoe the first thought is of that class of craft found on many of our northern and western lakes; but the Chesapeake Bay canoe is a type that is entirely different. The Chesapeake Bay canoe, or "cunner," as it is better known along the eastern shore of Maryland, is of log construction, with a beam of not over one-fifth of its length; but in spite of its weight it is an admirable sea boat, and, skillfully handled, is capable of riding out almost any weather that the Chesapeake affords—which is saying a good deal.

On the other hand, the cunner is no craft for the novice or even for the man who has been accustomed to sailing craft of the regular type. It has a little movement of its own and possesses every virtue of the bucking pony. One good thing may be said for it. It will not sink; the unlucky summer boarder who is learning how to sail a cunner needs only to hold on until he is picked up.

To the average Eastern Shoreman the cunner is almost his sole source of transportation; it is his means of livelihood in winter and summer. He thinks as much of his boat as he does of his family. To the youngster there is no possession as dear as a cunner. To own one is his earliest ambition and he is indeed proud when for the first time he steps on board his own boat.

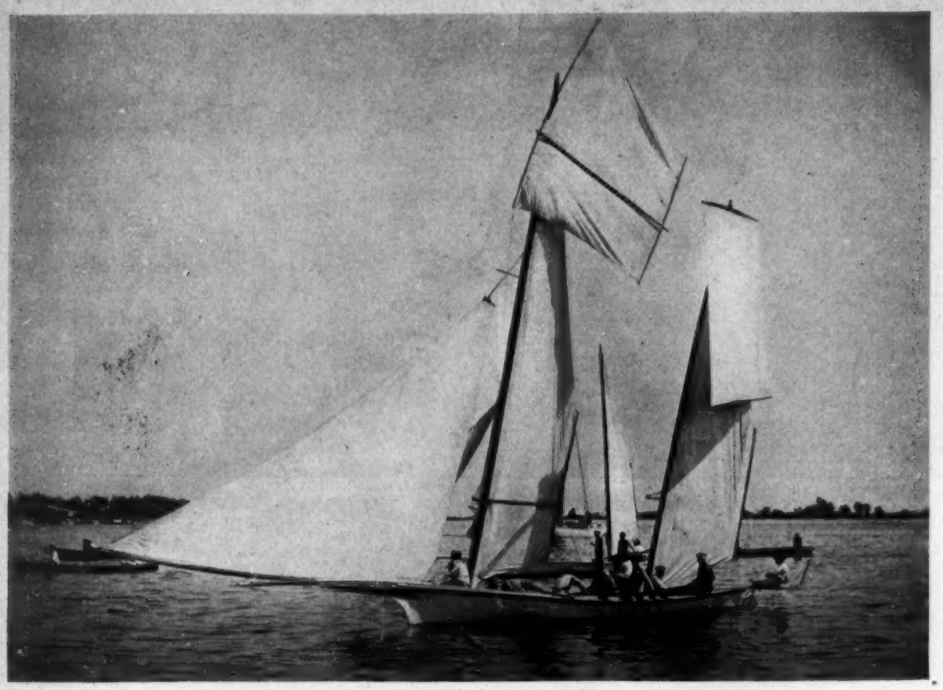
The Chesapeake Bay canoe is a development of the dugouts used by the Indians long before the prows of the ships of white men cleaved the waters of the bay. History frequently mentions these rude craft, but there is no mention of when the first canoe of the type now used was built. For 200 years, at least, the Chesapeake Bay canoe, in general shape, has remained the same. True, there has been a refinement of the lines, as represented by the racing craft, such as the Island Blossom, but that is all. Even in this boat the method of construction is identical with that of several thousand others, all of which are so much alike that it is a difficult matter to tell one from the other.

The canoe is not constructed; it is built, and built as is no other kind of boat. The best canoe builders are not boat builders in the accepted sense of the word. Ninety-five, yes, ninety-nine per cent of them have no yards. They are generally oystermen in winter and farmers in summer—men who make their living on land and water and build canoes as a side line.

Perhaps the greatest canoe builder of them all was Greenbury Coffin, of Tilghman's Island. For forty or fifty years he turned out the fastest craft that floated. He was a master hand and a Coffin canoe was a guarantee that it was of the best possible material. And yet Coffin was an oysterman and farmer. Only a few years before he died did he give up the water and plough to put in all of his time on marine work and canoe building.

DURING THE WINTER MONTHS THE CHESAPEAKE BAY CANOE IS USED EXTENSIVELY FOR OYSTER DREDGING

Coffin's reputation was built, and lasts, on a fleet of "Island" boats. The first was the Island Bird. Then, in succession, came the Island Beauty, Island Belle, Island Bride, Island Queen and Island Blossom. The Island Bird was built to become the champion of the vast fleet that met in the annual regattas at St. Michael's and Oxford. She fulfilled her mission. The Beauty was built to beat the Bird and each



CANOE ISLAND BLOSSOM, QUEEN OF CHESAPEAKE BAY, UNDER RACING RIG

of the others were built to defeat its immediate predecessor. That they did is a matter of history; and the Blossom, still the champion, was the last canoe that the venerable master turned out. Few designers have ever done as well in a score or more years, no matter what types of craft they produce.

Now the strangest part of canoe building is that neither owner nor builder know what kind of a canoe will be the outcome until the boat is completed. Beyond the length and the beam everything is left to the builder. That is because a canoe is not "laid down." It has no definite lines; in fact, no one ever drew any lines for a canoe. The builder is instructed to "get out" a canoe of a certain length. If the craft is for general work the breadth will be about one-sixth of its length. If, however, the owner says that he wants speed as well then the beam is made a little less.

In February the canoe builder slings an ax and an adz over his shoulder and goes forth to find his timber, which is standing. For canoes, pine is the only wood used and this must be cut at the right time of the year, usually February, before the sap has started up the trunk.

When the tree is felled the builder goes to work with his adz and shapes up what will be the center "chunk." He practically finishes the chunk and props it up. Then he goes after his other chunks, five of them being needed for a 30-foot canoe.

With the last chunk trimmed the builder has completed his work for the time being, and, leaving the chunks where he cut them, he goes home to await the coming of spring. Now it might sound simple, this going after standing timber, and one might imagine that it does not require any skill. But it does. Not only the skill to cut and shape the chunks but a knowledge of woodcraft. There are many varieties of pine but only one that is the best for a canoe. Then, too, the tree must be perfectly healthy, thoroughly sound and free from windshakes and blemishes. Nor must it have too many limbs.

It is not every acre of woods that will yield a good canoe log, especially nowadays when so much land has been cut over, and the getting out of five logs sometimes takes a man over many miles of territory.

During the latter part of May, or early in June, the building of the canoe is continued. The chunks are hauled from the woods to the builder's home and the work begins. So well has the shaping of the chunks been done that it is only necessary to use a plane to smooth them a bit and make them fit each other perfectly.

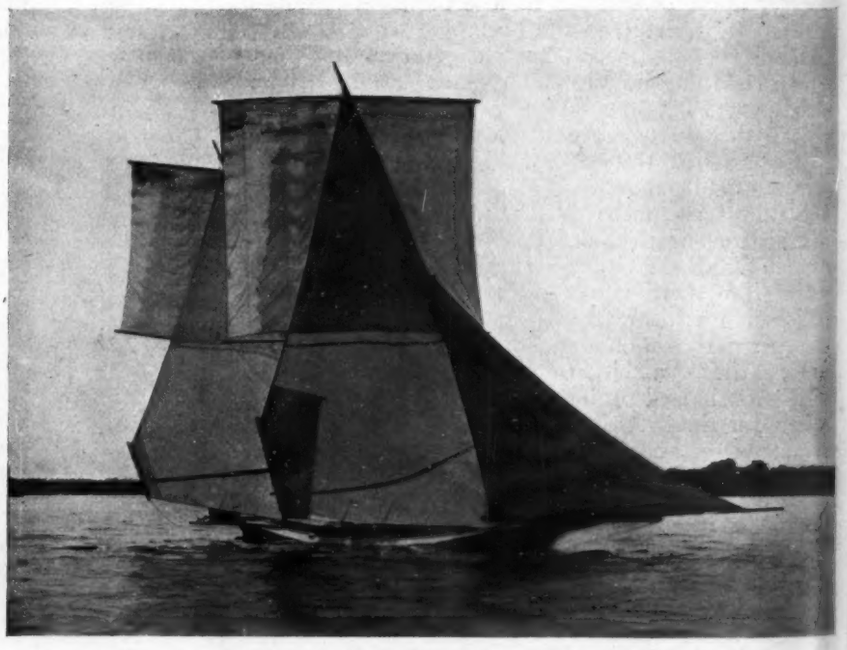
The center chunk is laid on a piece of level ground and to it the first of the side chunks is made fast with stout iron pins; then the second side piece is made fast to the first in the same manner. That makes one-half of the boat. Then the two chunks for the other side are put in place and the bottom is ready for the adz.

Now comes the part of the work in which the utmost skill is required, for it is nothing more than whittling out a boat, just as models are made. After the bottom is well shaped with the adz it is rough planed and then smooth planed and sandpapered. Then the canoe is turned over and the work begun on the interior.

The center chunk and the two chunks on each side form the bottom, while the outer chunks are the bilge chunks. The latter are gouged until they measure one and one-half inches thick at the top and conform in thickness with the bottom chunks. To the bilge chunks are made fast frames, every five feet, and to these frames is fastened an inch-and-a-half board, six inches wide, forming the "boot-top." To the boot-top are made fast the knees which support the washboard, a strip five to seven inches wide with an inch combing.

The cutting of the centerboard hole and the building of the well-box follow, after which the canoe is built. Although the construction is over the canoe is not yet ready for delivery for it must be processed. This "processing" consists of filling the hull half full of linseed oil and turpentine, in equal quantities. When this has soaked into the wood more is put in and continued until the wood has absorbed all it can. Then, and not until then, is the canoe ready for its owner.

The mast-steps of a canoe are a feature. In the bow is stepped the foremast, while the mainmast is well aft. The step for the foremast, which is the larger of the two spars, is in two parts. The bottom part consists of a pair of blocks which support a short iron rod, the foot of the mast being slotted to receive it. The upper step is a piece of two-inch board fitted snugly into the boat. This board is slotted from twice to three



DOWN THE WIND WITH SQUARE SAILS SET

times the diameter of the mast, in a fore and aft direction.

The reason for this is that when the canoe is sailed on the wind the mast is allowed to drop back in the slot, giving it a sharp rake aft. When off the wind the mast is blocked against the forward part of the slot, which makes the mast stand up straight. Much of the speed of the canoe depends upon the rake of the masts, though, of course, each craft, in that respect, is a law unto itself.

The step for the mainmast is identical with that of the foremast save that the upper step is a board that extends the width of the hull and, besides supporting the mast, also stiffens the hull.

Now come the spars and sails. The spars consist of mast, sprit and club for fore and mainsail and a club for the jib. There are few canoes that do not have at least two complete rigs—working and racing. The working rig is for general use, but when the racing rig is put on one gets an idea what sail carrying really is.

In the first place the racing rig of a 30-foot canoe consists of a foremast 37 feet long and a mainmast 30 feet long, a pair of spars that the natural stability of the hull will not support, so the moment these spars are in there must be ballast to keep the boat upright.

The ballast that a racing canoe carries is live ballast, consisting of nine or ten men, seven of whom have 12-foot boards. When on the wind these men with the boards stick the ends of the boards under the lee washboard, rest the boards on the weather washboard and then crawl out on the ends. This "hiking out to windward" gives one plenty of excitement, and, when the boat is going about, there is ample work getting in, shifting boards and getting in position again.

Fortunately for all concerned the canoe goes about slowly; that is, slow compared with a knockabout, but even at that it is fast enough to make one wonder how the men manage to keep the canoe on its feet at all. As a matter of fact, sailing on the wind is not half as ticklish as running free. Then, not only are both masts braced forward but great square sails are hung from each mast. This enormous spread of sail aloft with the small supporting body below gives but a small range to equilibrium. All the time the men with the boards have to be on the alert and one or two have to be out on each side while the others shift their position to counterbalance the swaying of the canoe.

A glance at the illustrations will give a clearer idea of the carrying of these square sails, as well as what "hiking out to windward" means.

Now a word about sail area. All sail used on a canoe is made of sheeting or unbleached muslin, and most of the sails are home-made at that. For the jib about 15 square yards are required, 35 square yards for the foresail, 25 square yards for the mainsail, 10 square yards for the fore topsail, 6 square yards for the main topsail, 20 square yards for the fore squaresail and 15 square yards for the main squaresail. This gives a total of 126 square yards of which 110 square yards, or 990 square feet, is carried when running down the wind. Not a small amount of sail when one considers that the craft that carries it is but 30 feet long, a little less than six feet in beam, and draws but six to eight inches of water!

About ten years ago, when the canoe, Island Blossom, was racing against a celebrated Western Shore canoe (the John V. Harrison) the Blossom, while running before the wind, capsized. Her crew at once set to work to get her in shape again. They pulled out the masts, righted the hull and with their hats bailed it out. Then they stepped the masts, set the sails and went on after the Harrison, which had, in the meantime, obtained a two-mile lead. Luckily a shift in the wind gave the Blossom an advantage and she crossed the line a winner.

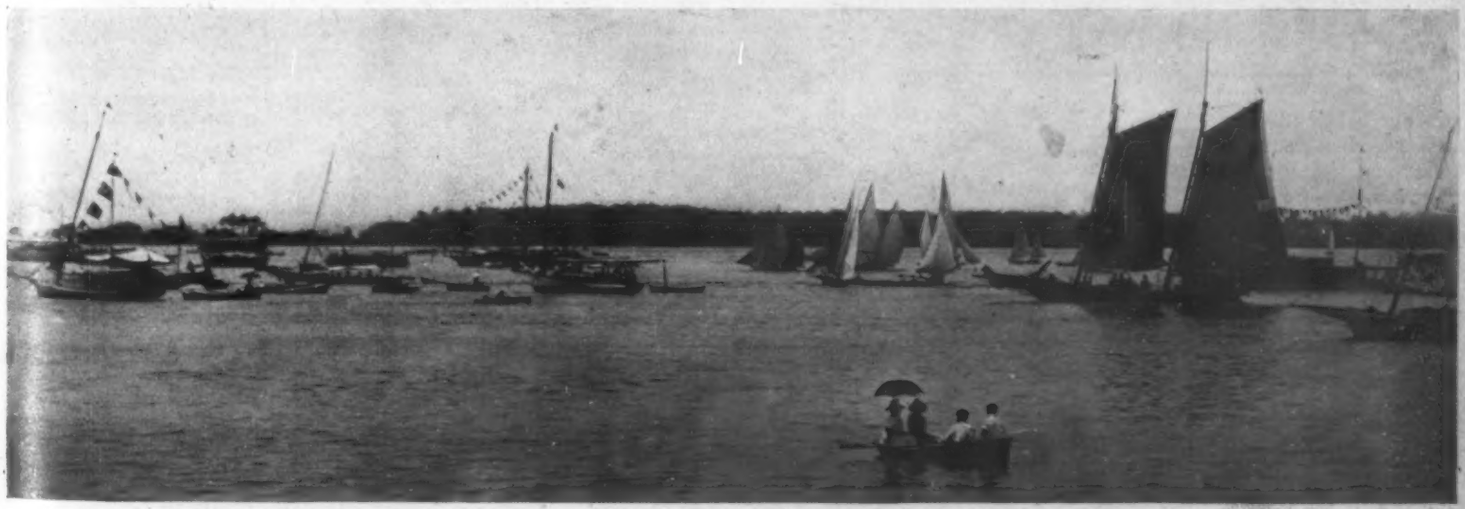
I am sorry to say it, but the days of the racing canoe are waning, largely on account of the introduction of the gasolene engine. Of a score or more of the canoes that met annually for the races under the auspices of the Chesapeake Bay Yacht Club at St. Michael's and Oxford there are not more than two or three that are not motor boats. The Island Blossom, the queen of canoes, has not yet been subjected to power and last summer, owing to lack of entries in the canoe event, under the auspices of the Chesapeake Bay Yacht Racing Association, she was sent against the Ojigwan, a 21-foot raceabout, which she defeated with ease in a light to moderate breeze.

Canoes are generally meant for work. The greater number of canoe owners are men who gain their livelihood from the water, oystering in winter and fishing and crabbing in summer, during which time the canoes are put through the hardest kind of treatment—treatment that frame and plank craft would not long survive.

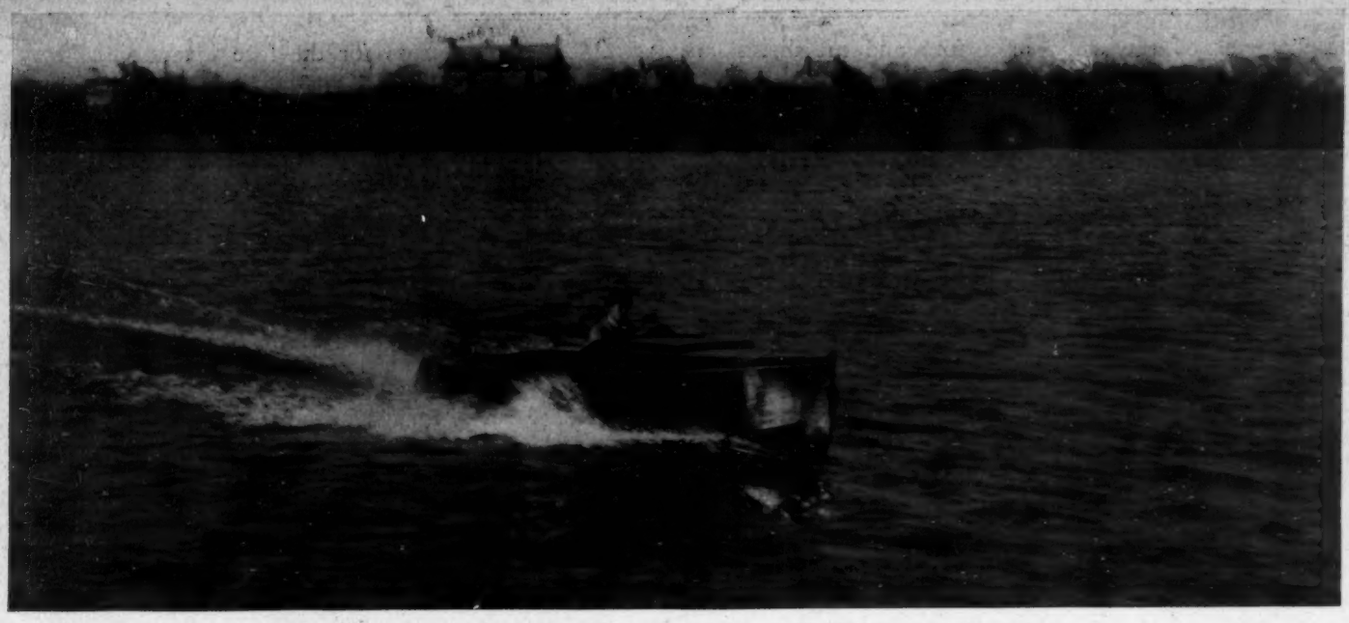
While the price of a canoe varies with the locality in which it is built, costing less in the remoter districts, a 30-footer designed for racing, equipped with all necessary spars, sails, outrigger boards, etc., will cost, approximately, from $250 up. A canoe of this size, with a 5 or 6 horsepower motor, makes an ideal craft in which to knock about even in bold waters.

Just after the close of the oyster season, in May, every canoe man hauls out for oiling. Ten or fifteen gallons of linseed oil and turpentine are poured in the hull and allowed to soak into the wood. This oiling not only preserves the wood but prevents the water getting in and making the hull soggy.

There are afloat to-day, and in good condition, many canoes built forty and fifty years ago. While the canoe costs three times more than a frame and plank boat to build its life is many times longer, hence it is cheaper in the end and its cost is more than justified.



THE START OF A CANOE RACE AT OXFORD, MARYLAND

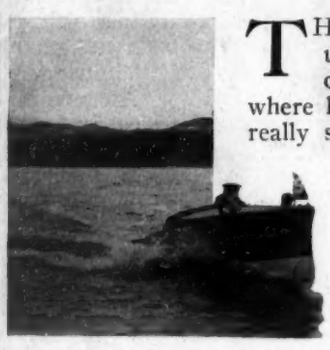


FREAK, A 21-FOOTER WHICH LIVES UP TO HER NAME. NOTE THE HARD CHINE FORWARD

Twenty-one Twenty-one-footers

Success of an English Restricted Class. The Best of Racing with Enough Latitude to Allow of Different Designs. Should Be Tried Here

By J. RENDELL WILSON

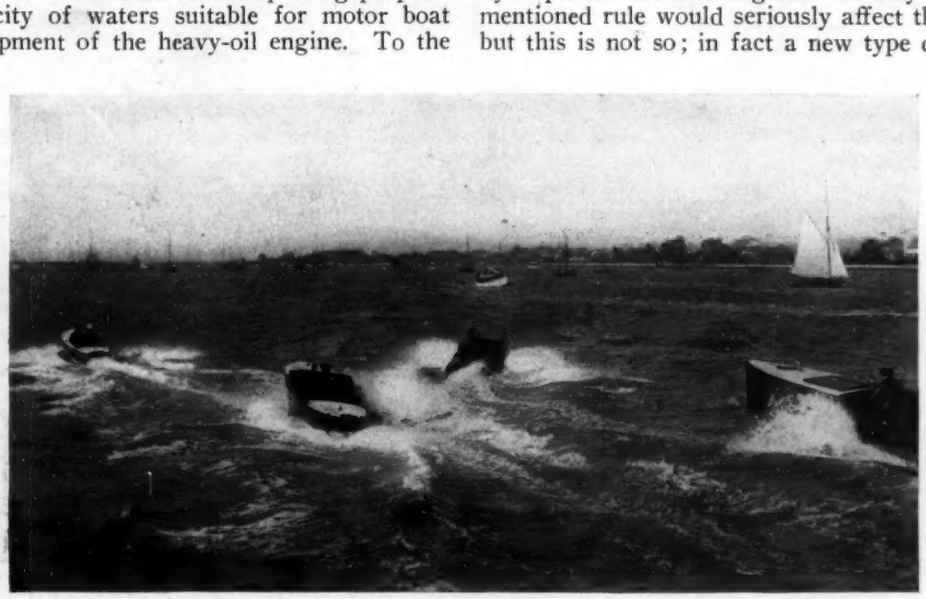


VICUNA

THERE is no need for me to dwell upon the difficulties that motor boat clubs in America, England and elsewhere have met in endeavoring to form a really successful one-design, or restricted, class of racing power launches, as these are known by heart to every enthusiastic follower of the sport. But it is rather curious that the first restricted class to have attained the right to be termed successful should have been formed in England, where more attention is being paid to the commercial side than to the sporting proposition, owing to the scarcity of waters suitable for motor boat racing and to the development of the heavy-oil engine. To the British Motor Boat Club does the honor belong, and although the Royal Motor Yacht Club of England has also formed a restricted class it has not yet attained anything like the popularity of the 21-footers.

Probably the secret of the success of the B. M. B. C. restricted class is due to the fact that the rules tend to promote a type of boat that gives reasonable speed, combined with seaworthiness and strength, at quite a moderate cost, and well within the reach of the ordinary marine motorist. A good boat can easily be built for this class within $700, and for this money excellent sport can be obtained, as the class has an average speed of about 20 miles per hour. The most recent addition has, however, attained 23½ miles per hour on trials with the throttle not fully open and the engine turning a couple of hundred revolutions below the maximum. Consequently, at the time of writing there are no fewer than twenty-one boats built, or building, especially for the class, and of these seven have gone to the Monaco meeting, where special races have been arranged by the authorities there.

The rules of the class were published in a recent issue of YACHTING; but I offer no apologies for repeating the principal details here. The length, of course, is limited to 21 feet overall, with a minimum beam outside planking of 3 feet 9 inches, while hydroplanes are not eligible. It may be thought that the last mentioned rule would seriously affect the popularity of the class, but this is not so; in fact a new type of hull is being developed with satisfactory results.

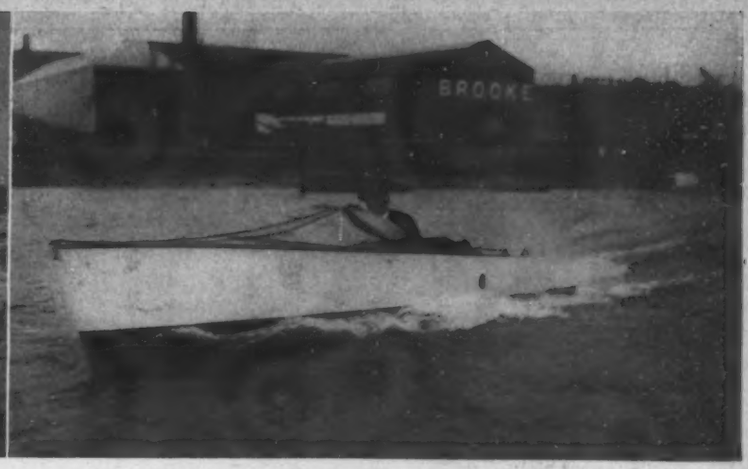


THE 21-FOOT RESTRICTED CLASS RACING AT BURNHAM-ON-CROUCH

The reason for this is easily found. About England the water is generally choppy or rough during the racing season, and while hydroplanes are fast in smooth water, a little lop of a sea seriously reduces their time round the course. Thus displacement boats stand a better chance of maintaining their declared speed throughout the season.

The new type of hull now being largely adopted, such as the Cox and King design,

CORDON ROUGE, THE MOST SUCCESSFUL OF LAST YEAR'S BOATS



CORDON ROUGE II, NOW TADPOLE

has a reverse curve in the forward sections, designed to collect the low wave and help the boat to ride upon it. The earlier models had a combination of V and U sections forward, and were of a modified sharpie type; but the latest hull has pure U sections forward, with the reverse curve somewhat pronounced. It has been found that boats built on these lines are very fast and dry, and the term hydroplane cannot be applied to them. These boats lean inwardly when turning.

With regard to the construction: it is necessary for the planking to be of wood of ¼ inch finished thickness. Two-thirds of the boat is decked in with wood not less than 3-16 inch thick, and it is recommended, but not compulsory, that two watertight bulkheads should be fitted, one forward and one aft of the engine.

Turning to the engine: any number of cylinders are allowed, provided the piston displacement does not exceed 151 cubic inches and the stroke does not exceed 6 inches. The whole of the boat, machinery and accessories must be manufactured, finished and erected within the British Empire. From this it would appear that any American firm with a factory in Canada is eligible to enter a boat.

Last year the following handicaps were in vogue: 15 seconds per mile for a win, 10 seconds per mile for second prize, 5 seconds per mile for third prize; but it was found that the faster boat suffered too much by the maximum penalty. Consequently the handicap for the coming season will be 8 seconds per sea mile for a win, with 4 and 2 seconds per mile for second and third prize winners, respectively. This applies, of course, for each race, thus every boat stands an excellent chance of winning prizes during the season. Non-starters will be penalized 5 seconds per sea mile. These penalties to be cumulative.

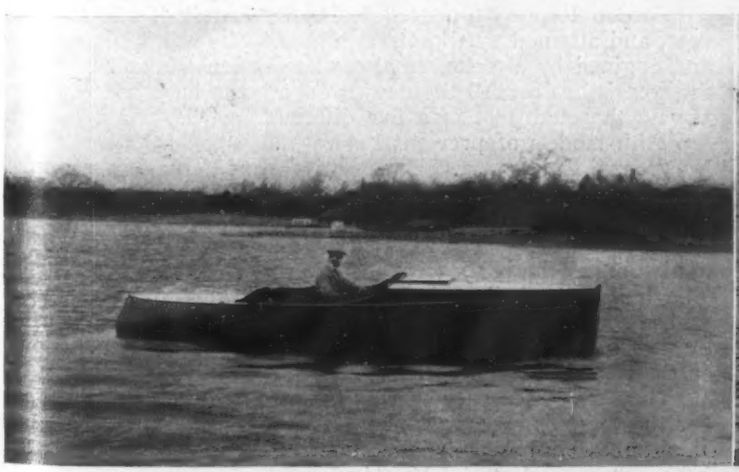
I understand that careful calculations on last year's races were experimentally made, placing the penalties at 4 seconds, 2 seconds and 1 second, respectively, yet this handicap brought similar results, as the heavy penalties after a number of races had been worked off. Based on the calculations for last year the new handicaps are likely to give the fairest results, especially with the increased number of boats to the class. There always, of course, being absentees it will be seen that the penalty of 5 seconds per sea mile awarded to temporarily missing boats will not encourage non-starts during the coming racing, and is a feature to be commended for this very reason.

During the season's races for the class, mostly in open waters such as at Lowestoft and Ramsgate, Cordon Rouge made nine starts and secured six prizes, consisting of three firsts, two seconds and one third; whereas Angela secured but one first prize, although she won six prizes in half a dozen starts, as two were seconds and three thirds. The following is a table of 1911 results:

Name.	No. of Starts	1st	2nds.	3rds.	Total
Cordon Rouge	9	3	2	1	6
Angela	6	1	2	3	6
Fuji Yama	6	2	1	1	4
Vicuna	6	3	—	—	3
Freak	5	—	2	—	2
Babs II	6	—	1	1	2
Cordon Rouge II. (now Tadpole)	2	—	—	1	1
Vice	8	—	1	—	1
Etukishook	1	—	—	—	—

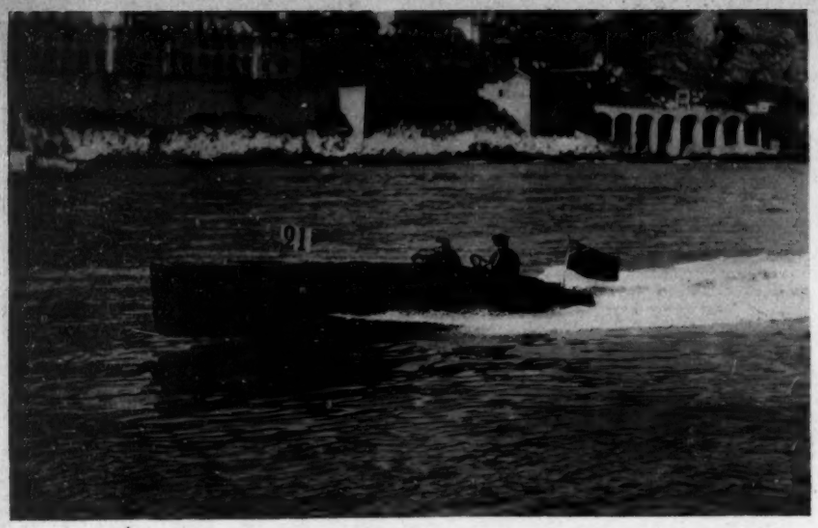
The best official time round of a course for any boat last year was 17.3 knots (19.9 miles per hour) attained by Cordon Rouge II.

I hear on authority that a new boat for this class has been designed by Despujols, the famous French builder. This, with the nine new boats building or built in England for 1912, brings the total number up to twenty-one, so some very spirited and excellent racing should be forthcoming.

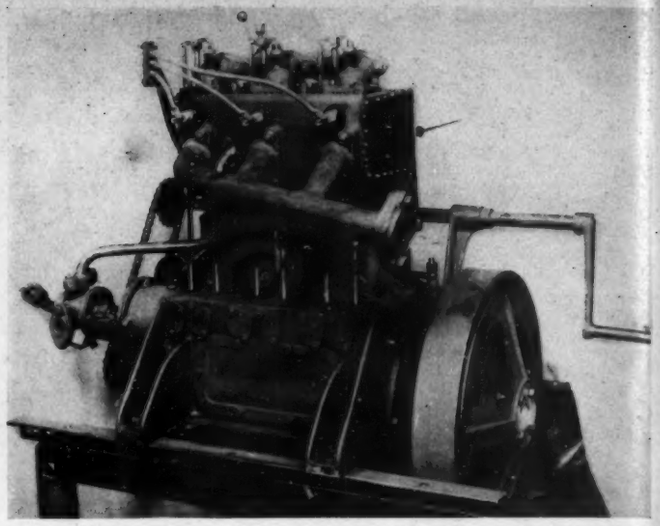


BABS II, ONE OF THE FIRST BOATS IN THE CLASS

ANGELA, ANOTHER SUCCESSFUL 21-FOOTER



DYACK, ONE OF THIS YEAR'S 21-FOOTERS THAT RACED AT MONTE CARLO



A BROOKE ENGINE ESPECIALLY DESIGNED FOR THE 21-FOOT RESTRICTED CLASS

Doubtless technical details of one or two of the 21-footers and their engines will be of interest to American racing motor boat men. Messrs. Cox & King having designed seven of the boats, and the new type of hull being a product from their drawing boards, I propose to deal with Dyack, the latest addition to the class, and the fastest. The principle of collecting the low wave has been retained, but the new design allows the fore-foot to lift just clear of the water when at speed; also the chine has been carried higher up the stem, thus the low sections are rather sharper than those of previous boats. It will be remembered that I went fully into the Cox & King design of hull in my article in YACHTING of July last, the B. I. trophy challenger Tyreless III being built on these principles. She was regarded by those present at the great contest as a displacement boat of the cruising type, yet her speed was over 36 miles per hour with only 300 H. P. Through her owner's misunderstanding the rules she was unable to show her true form.

The London Motor Boat in describing Dyack says:

"The two points of greatest vertical pressure at high speed occur respectively some few feet aft of the stem and at the stern, and the boat in consequence is longitudinally stable, while transverse stability is assured by the level trim and stable midship and after sections. The bow sections below the chine commence at the stem with a double concave form, and are sufficiently fine in this latter design to give a clean entrance, and prevent undue pounding in a seaway. A central convex form divides the two concaves and, commencing at the stem with small radius, becomes broader and flatter as the midship portion of the boat is reached, finally superseding the side concaves and finishing aft in a perfectly flat run. The midship section may be described as double concave-convex, each curve being part of the arc of a circle. The sides are approximately vertical amidships, developing a slight flare forward."

The engine of Dyack is a four-cylinder Vauxhall, which should be of interest, as six of this type, but of different bore and stroke, are being installed in a 330-H. P. hydroplane challenger for the next B. I. trophy race, which is building for Mr. Dan Hanbury, owner of Zigorella, a competitor in the 1910 contest. The cylinders of Dyack's engine have a bore of about 3½ inches by about 3¾ stroke (90 mm. x 98 mm.) and are cast *en bloc*, with a gun metal water jacket cover to the cylinder heads. All the valves are arranged on the port side, and the tappets and guides are enclosed, the usual cam shaft being driven by gearing off the forward end of the crankshaft.

Lubrication of the main bearings and big ends is by a double plunger-type oil pump driven by an eccentric at the after end of the cam shaft. The oil is drawn from a pump at the bottom of the aluminum crank case, through a filter, thence through five branch pipes to ducts drilled in the crank shaft. The cylinder walls and gudgeon pins are lubricated by splash. An oil pressure gauge is fitted, and an indicator follows each pump stroke.

Dual ignition of the high tension (spark jump) system is fitted, the plugs being mounted over each inlet and exhaust valve. Dyack is the boat mentioned as having attained 23½ miles per hour.

Seven of the boats have been engined by Messrs. J. W. Brooke & Co. and the illustration shows the model specially constructed for the 21-foot class. This firm have also designed and built a number of the hulls. Last year's engine had three cylinders with a bore and stroke of 3¼ inches by 6 inches, but the new engine, as fitted in Tadpole, has the same number of cylinders, but 3⅝ inches bore by 4⅞ inches stroke. This gives one cubic inch greater area, and leaves ¾ cubic inch inside the limit allowed. From these latter dimensions 40 H. P. has been obtained at 1300 R. P. M.

The cylinders are cast *en bloc* and have copper water jackets, and are mounted on an aluminum crank case. It is interesting to note that the inlet valves are operated by small rockers on the cylinder heads, which in turn are actuated by push rods from the crankshaft. This system has been adopted to obtain a better shaped combustion chamber and for the purpose of lightness.

The flywheel, which contains the clutch, is at after end of engine, and the ball thrust is between the engine and flywheel, so the propeller thrust comes directly on to the engine. Water cooling is by a rotary-pattern pump. The total weight is 210 pounds.

A word with regard to the 21-footers built by Brooke. Babs II was a mahogany launch of the ordinary displacement type and was launched in 1910. She was followed by Freak, really an experimental boat constructed of pine from designs by Cox and King, and was the forerunner of the reverse curve type of hull such as Dyack, Grayling, Cordon Rouge and Angela.

Cordon Rouge II proved to be the fastest of the class last year, and attained 17.3 knots in a race. She was designed, built and engined by Brooke, as also was Cordon Rouge III, one of this year's boats. All the new Brooke boats have been designed after a thorough test with five different models, and a comparison with models of previous hulls.

Vicuna, Fuji Yama, Vicuna II and Fuji Yama II are Boulton and Paul engined boats and were designed by Mr. James A. Smith, a well-known London naval architect. The first two have a beam of 4 feet 4½ inches. This is well in excess of the minimum, as the boats were also required for pleasure cruising. The hulls are planked fore and aft with red cedar, on closely spaced rock elm timbers, while the floors, stem, knees and stiffeners are of English oak, with cedar decks. The construction is on the riband carvel principle.

They have been very successful boats and their average speed for the season's races was about 16 knots. Each is driven by a Boulton & Paul four-cylinder monobloc engine. The cylinders have a bore and stroke of 3 inches, and 5 inches, respectively, and about 22 H. P. is developed at 1200 R. P. M.

The Heavy Oil Engine for Large Auxiliaries

By J. T. ROWLAND

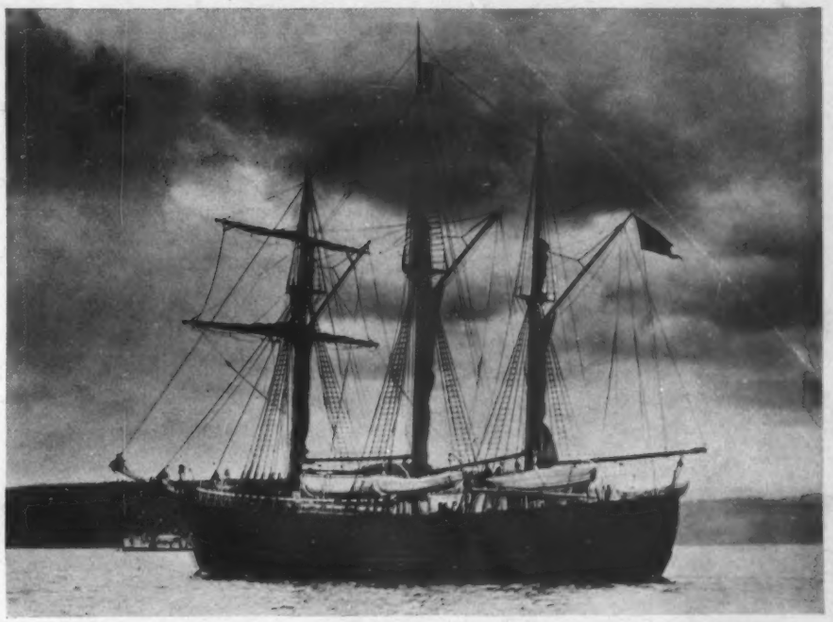
ILLUSTRATIONS BY FRANK C. PERKINS

IT is not a little interesting to note that before Captain Amundsen started on his last expedition, which resulted in the attainment of the South Pole, he had the steam plant removed from his ship, the Fram, and substituted in its place a 180-horsepower Diesel heavy-oil engine, which, running at 280 revolutions per minute, is capable of developing a speed in the boat of from 7 to 9 knots, varying with the load and consequent draft of the ship.

No less a veteran in Polar work than the captain himself was his ship, the good old Fram. She was built for Doctor Nansen from designs by Colin Archer, and was planned especially for ice work. The stem is constructed of three pieces aggregating a total thickness of no less than four feet of solid oak, and the sides are also of oak, varying in thickness from 24 to 28 inches. In addition to this, the ship was very heavily timbered and braced with diagonal and transverse members. There is special sheathing below the waterline; and the sharp stern and quick bilge produce a type of hull which will rise under pressure from ice floes instead of being crushed between them.

It will be remembered that the Fram entered the pack-ice in the vicinity of the West Siberian Islands in June, 1894, and drifted with the current clear across the Arctic Ocean, coming out into open water again a short distance west of Spitzbergen in the fall of 1896. The fact that she survived the imprisonment of over two years in the grip of the Arctic ice speaks eloquently enough for the skill with which she was designed and constructed.

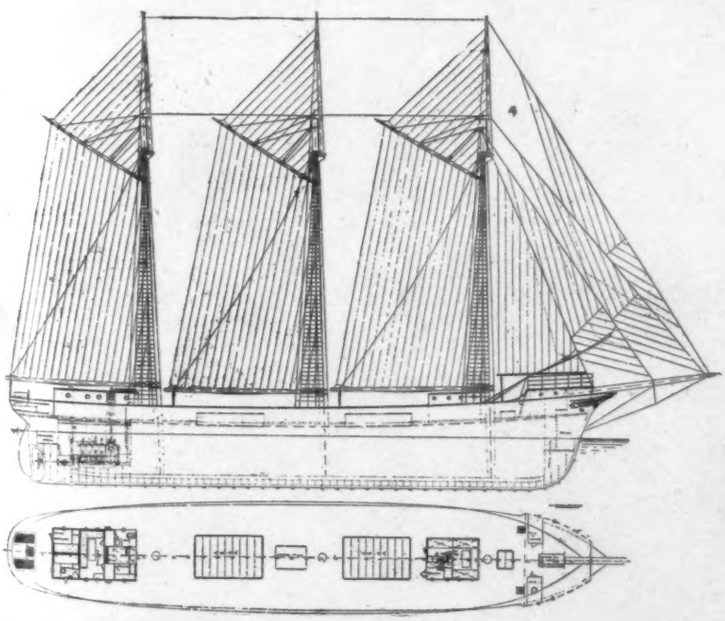
With her old power plant, which was a triple expansion steam engine of 220 horsepower, the Fram could carry sufficient coal to steam for four months at full speed, but this radius has been considerably increased by the adoption of internal combustion power, and there has also been a decided gain in available space for the storage of provisions, which is the most important consideration in a vessel intended for the work of polar exploration.



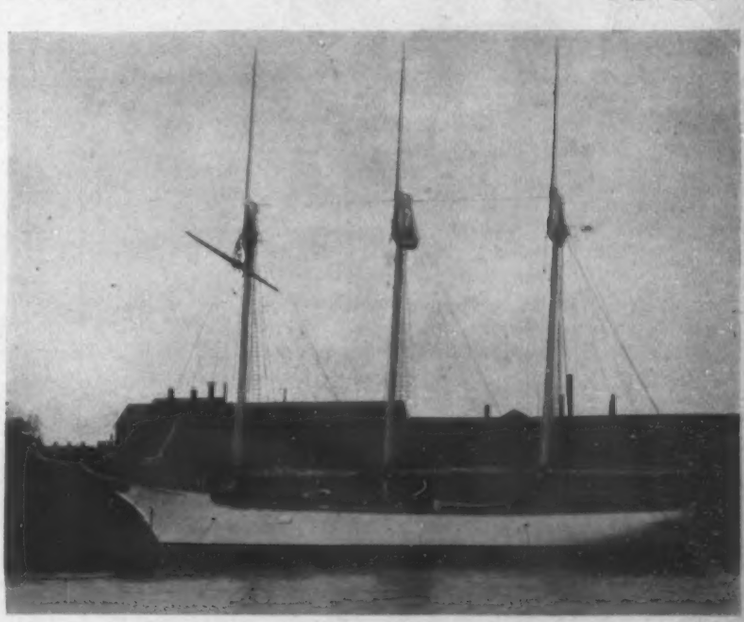
THE GOOD OLD FRAM, NANSEN'S AND AMUNDSEN'S EXPLORATION SHIP, IS NOW FITTED WITH 180 H.P. DIESEL ENGINES

Two other interesting sailing vessels in which large heavy-oil engines have been installed are illustrated on this page. One of them, the Orion, is said to be the first vessel to use a reversible Diesel engine as auxiliary power. The waterline length of the Orion is 108 feet 10 inches, and her beam and draft are 29 feet 8 inches, and 10 feet 6 inches, respectively. The motor, which is of 60

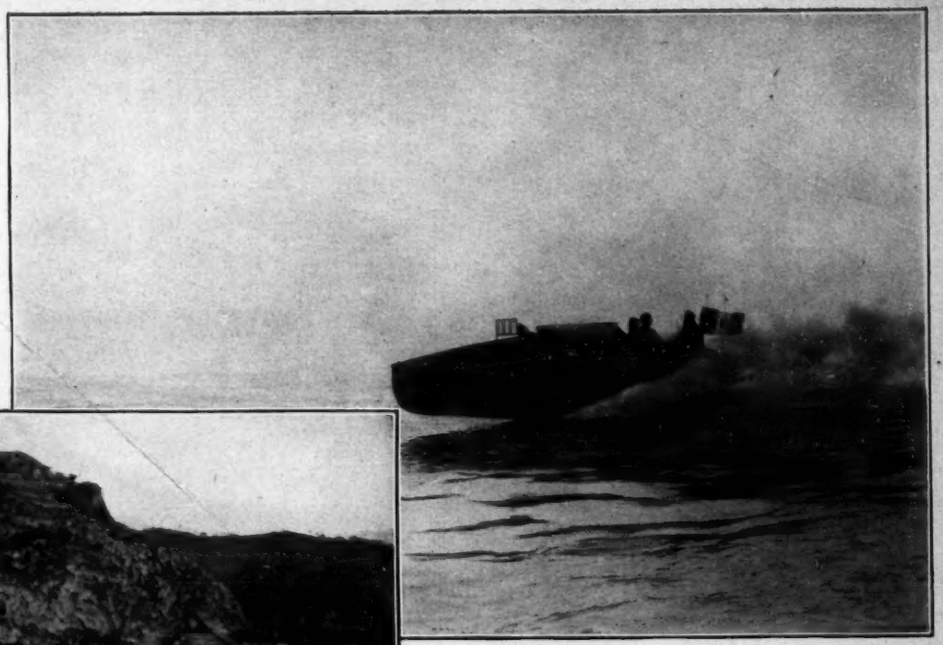
(Cont'd. on page 536)

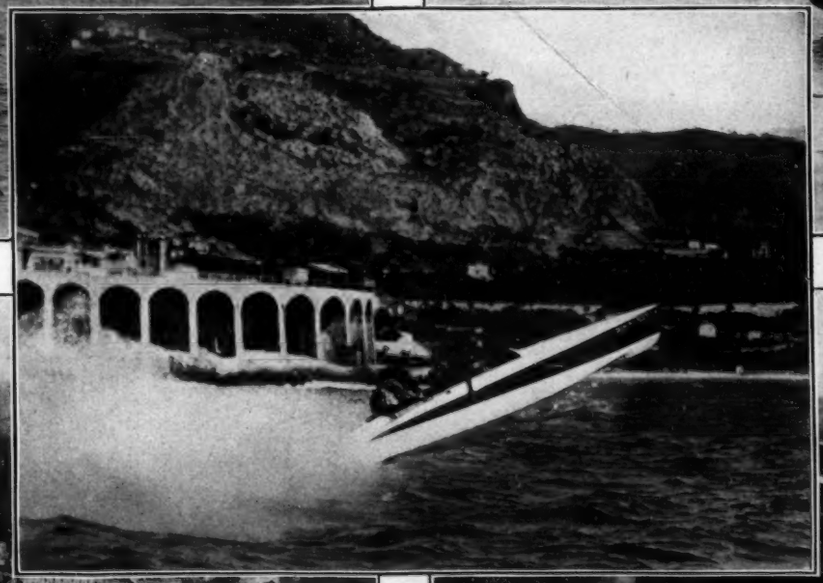


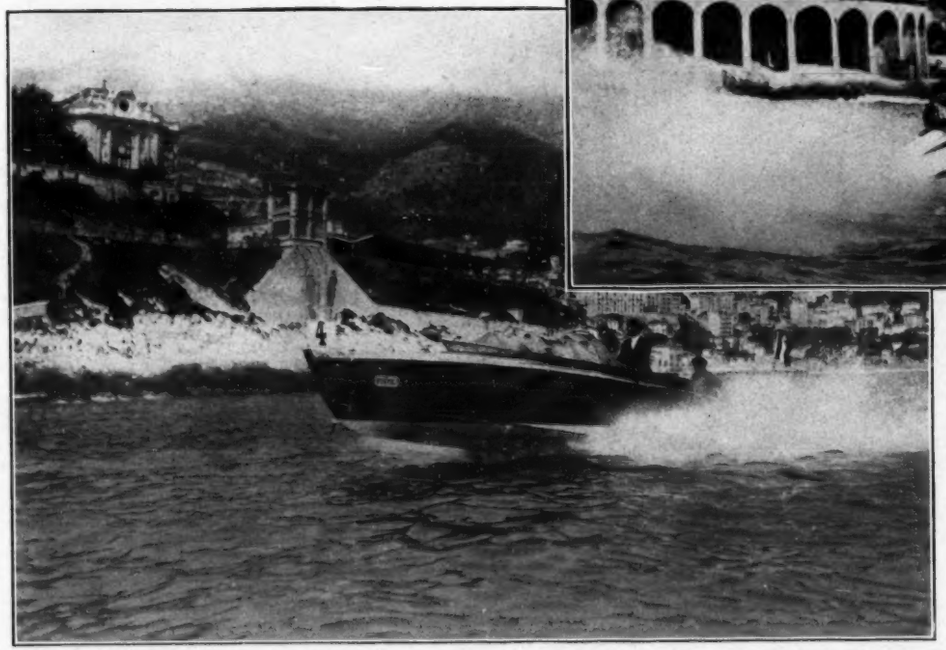
A GERMAN 500-TON SCHOONER EQUIPPED WITH 180 H.P. HEAVY OIL ENGINE

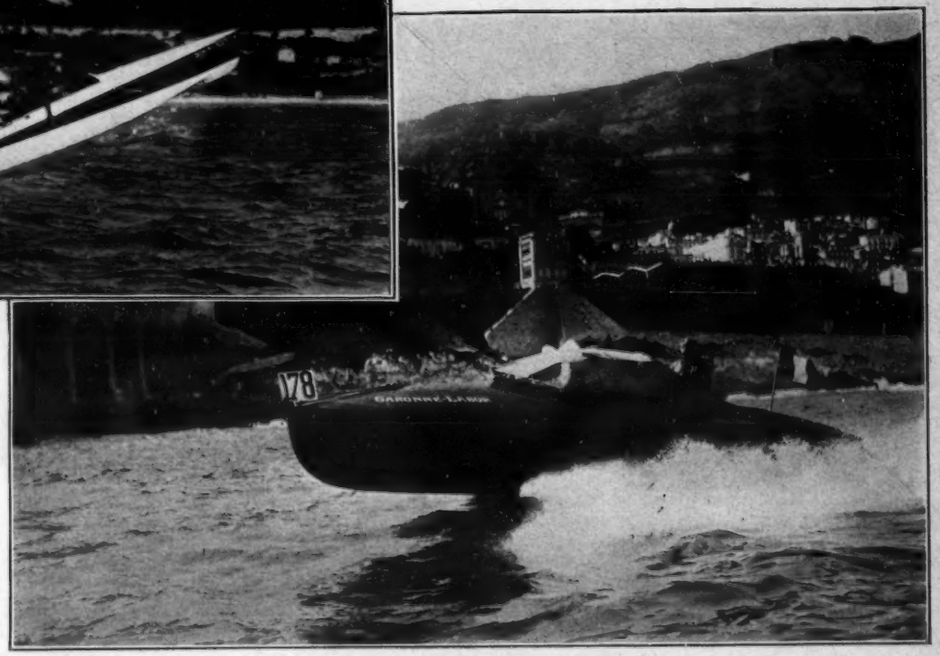


ORION, A DIESEL ENGINED AUXILIARY OF 60 H.P.









SOME OF THE BOATS SEEN AT THE MONACO RACES, 1912

Saurer-Lürssen showing her curious underbody.

Pistil, a Panhard hydroplane.

One of the phenomenal leaps frequently made by Saurer-Lürssen as the seas slapped her.

Sciata, an Italian racer. She averaged 37.2 knots for one lap in the races for the "Navigability" prize.

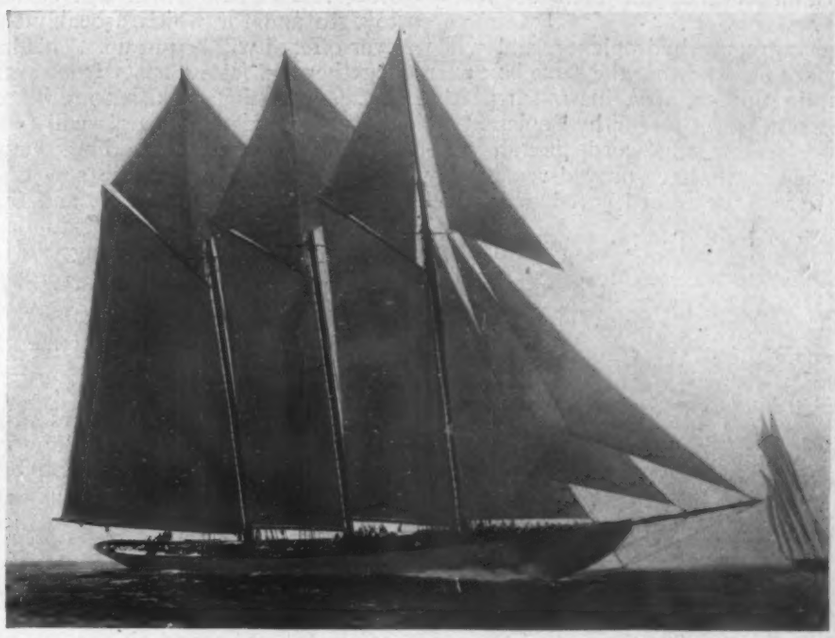
Garonne-Labor, a cruiser, so-called, was a good sea boat.

The Month in Yachting

TAKING it all in all the outlook for a satisfactory season in high-speed boat racing is very unsatisfactory owing to the failure of the various power boat associations to clear up the situation in regard to the rating rules, and their failure to arrive at any satisfactory decision as regards the status of the hydroplane. While the outlook for new boats has never been more promising, and while, undoubtedly, we will see greater speed this year from moderate sized boats than ever before, the rule situation is causing a good deal of uneasiness among the owners of these craft. The Western associations are not as badly fixed in this respect as the Eastern ones, as both the Western and the Mississippi Valley Power Boat Associations will still race under their unlimited classification based on overall measurement alone.

There is to be another meeting of the executive council of the A. P. B. A., and let us hope that something will be done to clear up the existing situation. Several propositions are to be proposed at this meeting which, if adopted, will have great bearing on the future. It will be a shame, however, if we have to go through another season upon the unsatisfactory basis of last year, where hydroplanes and displacement boats were incontinently jumbled together and where 14-foot boats with small power defeated boats very much faster, on time allowance.

Another matter that is still badly in need of adjustment is that of a permanent board of control to govern racing in the United States. If neither one of the existing organizations is strong enough to obtain such control it would seem as if a strong central body composed of delegates from these various organizations might be created. Such a body should have definite and final powers if it is to accomplish anything. Before anything could be done in this line, however, some explicit and uniform system of rating rules must be adopted. It looks as if it is up to some of the associations and clubs to bury their jealousies and selfish interests in a common cause.



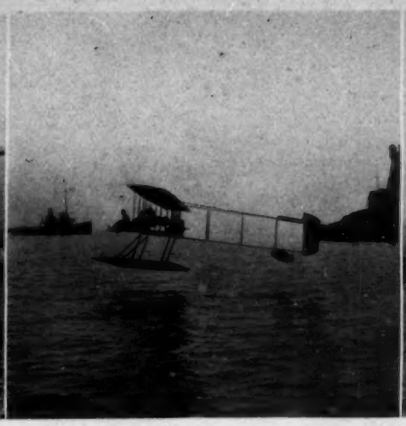
SCHOONER YACHT KARINA WHICH IS NOW ON HER WAY ACROSS THE WESTERN OCEAN IN QUEST OF A NEW RECORD

Throughout the winter YACHTING has strongly advocated the appointment of one measurer for each yachting association or for each locality, doing away with the election of measurers by each club with the consequent chance of dispute over ratings. The clubs composing the Massachusetts Yacht Racing Association have practically accomplished this end, the leading clubs having agreed upon the same measurer. The Yacht Racing Association of Long Island Sound has followed suit by recommending that all the clubs in the association choose the same measurer, and by appointing as the measurer of the Association Prof. William Hallock, who was last year the measurer of the New York Yacht Club. While this step, of course, is not compulsory on any of the clubs of the Association, it will eventually have the desired effect. The Larchmont Yacht Club has already appointed Professor Hallock measurer, while he is already measurer of the American Yacht Club. Holding this position in these three clubs will practically assure a certificate signed by the same measurer for the leading racing yachts of the Sound. It is fair to say, in regard to the other yacht club measurers, that the difficulty in the past has not been due to the inability on the measurers' part as much as it has been to interpreting the rule—the present rule being ambiguous in certain clauses. With a clearing up of those particular sections more satisfactory results will be obtained.

On May 15th Commodore Robert E. Tod's Karina left New York for a jaunt across the western ocean, her first port of call being Southampton, England. The Karina did so well in those long distance races in which she was entered that, given any kind of an even break on the weather, she ought to give a good account of herself in this 3,000-mile run. It is said that Commodore Tod will try to establish a new record for yachts in crossing, but to do this he will certainly have to travel pretty fast to beat the record made by Atlantic of some twelve days and four hours, from New York to Land's End, in the German Emperor's race of 1905. During this trip her best day's run was 341 miles, and the Karina will have to travel to beat this. That record was made about the same time of the year, the race starting May 17th, if I remember rightly.

The P Class will again furnish a number of races in American waters this summer, for not only will they be the chief attraction at all the local regattas on the Sound and Massachusetts Bay, but the race for the Manhasset Cup is again assured, the Seawanhaka, Manhasset Bay, American and Chicago Yacht Clubs each having an entry. In addition to this there will be the International Series for the Richardson Cup at Chicago, beginning August 10th. This is an excellent class and it means much for yachting to have the principal racing done by boats of this size rather than with the large "single stickers" of which there were never more than three or four out in a season.

The results of the motor boat meet at Monaco in April, which is the biggest European motor boat event of the year and at which the last word in motor boat design is always looked for, are interesting though nothing particularly startling in the way of new records was established. The racing on the whole was good, and in the smaller classes and the so-called cruiser classes a number of last year's records were bettered. As regards hydroplanes, the results were somewhat disappointing, none of the new boats of this type showing to very good advantage. Neither the Thornycroft nor the Fauber types of hydroplanes, which have developed so wonderfully in the last year in America, were represented at this meeting, most of the boats of this type being of French design. Heretofore French hydroplanes were noted



HYDRAEROPLANING AT MONACO

Voisin hydraeroplane taking the water at Monaco. Farman carrying two passengers at Monaco. Wreck of hydraeroplane Canard-Voisin.

for their freaky appearance, most of them having long, blunt noses with a pronounced tendency to squat at the stern and throw their bows high out of the water. The types this year were in many instances more practical, though in the main they retained their boxlike form, which cannot but impair their seaworthy quality.

The new rules at Monaco segregate hydroplanes, and while the hydroplane is defined they are in somewhat the same box over there that we are at present in this country, inasmuch as the endeavor to beat the rules has resulted in a semi-hydroplane type which are "skimmers" in every sense of the word, though without the step. Some of these new boats have proved remarkably fast, though none of them showed the record speed which had been looked for.

Ursula again won the Coupe des Nations covering the 93 miles in 2 hours 40 minutes and 27 seconds. Another notable performance was that of Mais-je-Vais-Piquer, in the Championship of the Seas, a 200 kilometre event (approximately 125 miles), which she covered at an average speed of 35 miles, a performance that will rank as one of the notable achievements of the year. Another boat that attracted a great deal of attention was the Saurer-Lurssen, a Swiss boat of the semi-hydroplane type. While she showed good speed in a number of events, she was conspicuous by the manner in which she threw her nose in the air and lifted out of the water when she was slapped by the short seas of the Mediterranean. Sciata, an Italian boat, showed a great deal of speed at times, doing one round of the course in the best time of the meeting, though she was not able to maintain this speed for the entire race. She is an interesting development of the semi-hydroplane. She is without doubt a "skimmer" though she comes within the definition of a displacement boat. No American boats were represented at this event.

The yachting season at Chicago promises to be the busiest and most interesting that has ever been held in the "windy city." Not only will the old events, such as the race for the Lipton, the Nutting and the Herbst Cups be held, as well as the annual long-distance race for the Mackinac Cup, but there will be the series of races for the Richardson Cup between Patricia of the Royal Canadian Yacht Club and the new syndicate boat representing the Chicago Yacht Club, and the races of the Western Power Boat Association which will be held the week of August 10th to 17th and for which probably the finest collection of trophies ever offered will be put up. This last regatta is expected to bring together the fastest boats from every part of the country, and it looks, from the plans that are being made to get new fast boats, that many existing records will fall.

Chicago itself is building a number of boats for this event, chief among which is the new craft for Commodore James A. Pugh, of the Disturber II, and from which fifty miles an hour is expected. It has been said that $50,000 in prizes and cash purses will be offered during this regatta.

With many important races on hand this season, and owing to the fact that a number of them will be held for the first time under the universal rule of measurement, the Chicago Yacht Club has asked Mr. George P. Granbery, for a number of years chairman of the regatta committee of the New Rochelle Yacht Club, to take charge of their regattas this season. Mr. Granbery has had much experience in handling big regattas, the New Rochelle Yacht Club being one of the foremost racing clubs at the western end of Long Island Sound. He is thus amply qualified to fill the position. He is a keen racing man and knows the game thoroughly from all angles.

The Great Lakes Power Boat League, composed of yacht clubs situated on the lower lakes, will hold their annual regatta at Hamilton, Canada, this season under the auspices of the Royal Hamilton Yacht Club. This is the first time that the League, or any power boat league in which American clubs are largely represented, has held a meeting in Canada. A very attractive program has been arranged for August 8th, 9th and 10th and many of the fastest boats in the country are expected to participate. Previous to this regatta comes the annual Scripps Endurance Race, which will finish at Hamilton in time for the racing there.

What is a Spark Plug?

"Can you come down to my boat? There is one cylinder I can't get to working, though the coil buzzes, and I get a spark at the plug terminal all right."

I went down to the boat and started the engine; one cylinder was dead. There was a spark at the terminal so I took the plug out, laid it on the engine and turned the flywheel over. It showed a good spark at the plug.

"When did you buy this plug?"

"Last week."

"How much did you pay for it?"

"Fifty cents."

"O!" (Meaning, I see.) "This isn't a spark plug."

"Isn't it?—what is it? It ran all right last Sunday."

"I don't know what it is. Because it ran last Sunday is the reason it will *not* run this Sunday. If you hadn't run it last Sunday it would run this. It's only good for one day. Throw it overboard. Pay at least $1.00 and get a spark plug."

In explanation of the above, the soot had worked through the mica of the plug. Laying it on the engine it shows a good spark, but when it is in the cylinder the pressure of the compression forces its way through the mica and makes a short circuit.

This was proved by shifting the plug, when whatever cylinder that plug was put in would stop firing.

Because a plug sparks *out* of the cylinder, it does not prove that it is sparking *in* the cylinder against the pressure.

F. R. WATERMAN.

Bucking the Siberian Ice in a Motor Boat

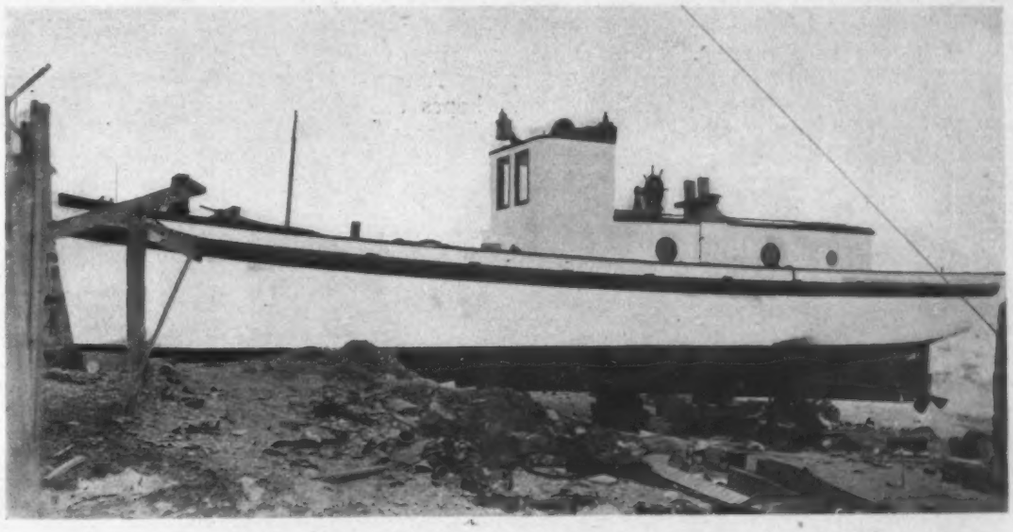
Being the Account of a Trip Along the Arctic Coast of Siberia in Search of Rare Species of Bird Life. Six Weeks Under the Arctic Circle

By CAPT. F. E. KLEINSCHMIDT

PART I

'TIS the first of June. Helios has mounted his chariot and is driving his fiery coursers up to the vault of heaven. He has abandoned his low curved path and for weeks has chosen a still deeper route, and now the course of his phaeton almost reaches to the Zenith. He is sending his unobstructed rays from the cloudless sky and below him man is scurrying hither and thither seeking a cool place or to find shelter from his scorching rays. So by way of contrast, or, as it were, to drop a piece of ice in the tumblers of those who do their boating in a milder clime, I tell this story of a motor boat cruise in the frozen north, with a background of glaciers, icebergs and everlasting snow under the spreading dome of Arctic skies.

Here in New York it is nearly midsummer, pleasure craft are riding at anchor or running around on every bay, sound or river, but up in Alaska on the shores of the Arctic Ocean the sea is yet full of ice and Behring Sea has just been freed from the shore ice and the heavy pack. The first passenger steamers are trying to push their way through the last icefields to the long-isolated town of Nome, in Alaska.



DIAMOND L WAS 47 FEET LONG AND BUILT ESPECIALLY FOR ARCTIC WORK, HAVING TWO 20-H.P. ENGINES DRIVING TWIN SCREWS WITH JOINTED SHAFTS, ALLOWING THE PROPELLERS TO BE RAISED OR LOWERED

My twin-screw motor boat Diamond L is blocked up on the ways on the beach at Nome, all ready to be the first to plunge into Behring Sea. She is a staunch craft and I had her built especially for Arctic work. Only 47 feet long by 12 feet beam, she has 12x12 timbers for keel, sister keelson 8 inch by 8 inch and solid oak bow and skeg. Almost flat bottomed she will rise under ice pressure and her two 20-horse power engines give her great speed and power. She has knuckle joint shafts that allow her propellers to be lowered into deep water or under ice pressure, which adds to her power.

The Arctic icepack has always been the terror of the north and usually paralyzes the inexperienced navigators. It has just sent to the bottom the greatest modern vessel, yet it has been vanquished by little cockle shells such as the Fram and Gjoa. Arctic motor boating in unexplored regions has just enough of the element of danger and mystery to make it the most fascinating of sports in the world.

The object of my cruise last summer on the northeastern Siberia coast was an ornithological search for two of the world's rarest species, the Spoonbill Sandpiper and the Ross Gull. We planned to make, ice conditions permitting, Cape Serdze Kamen, Kolutchin Bay, Cape North, Choun Bay and, if possible, to traverse the Arctic coast of Siberia as far as the mouth of the Lena River.

As soon as the ice left the Nome beach we launched the Diamond L, but had to defer our trip to Siberia for two weeks, as the ice off the northeast coast of Siberia does not loosen until three weeks after it does on the American Behring Sea side. While waiting we decided to make a trip to the unexplored and uncharted region between the mouths of the Yukon and the Kuskoquim rivers. This is a great breeding ground for all kinds of land and water fowl, and the home of some of our rarest North American birds.

The Yukon flats are very shallow, extending for many miles into Behring Sea. We could frequently touch bottom in three feet of water, yet there was no land in sight. The bays are equally shallow, which accounts for their not having as yet been charted and explored. The Diamond L, with her shallow draft, was therefore admirably adapted to our purpose.

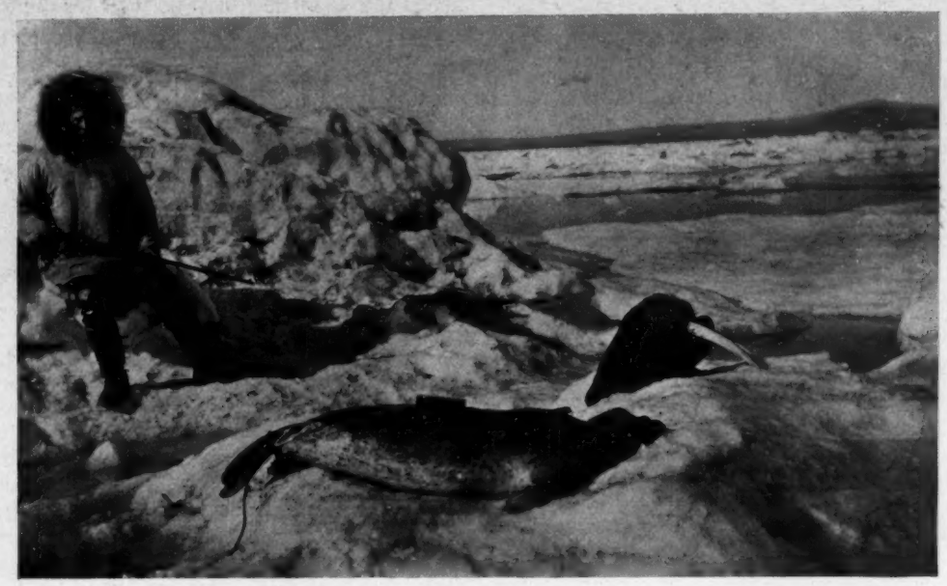
The Eskimos of this region we found singularly ignorant as compared with others only 200 miles away at Nome or St. Michaels. They have had but little intercourse with white men and were still using almost exclusively bow and arrow, harpoon and spear. This season of the year is one of great plenty for them, for the air is full of wild fowl and the salmon are running in great schools in the streams.

All over the marshy tundra we found the little nests of the Red and Northern Phalarope, a rounded hollow in a tuft of grass or in a bunch of moss. The beautiful Sabine gulls would deposit their eggs on the level grass without pretense of making a nest or hiding the eggs. Colonies of graceful terns, with nests but a few feet apart, would strenuously resent our intrusion by swooping fiercely down upon us, filling the air with their harsh, grating cries.

The Eskimos coming aboard our boat with fish, birds and eggs, begging for "shian" (tea), thought we were a crazy lot when they saw us refuse to buy their already cooked duck and goose eggs, and instead blow out others, preserve the shell and then throw the contents away. We would also preserve the skin of a gull, Jeager or hawk, and throw the meat away. For hours and hours these Eskimos would darken the entrance to

the cabin or press their noses flat against the glass of the port lights, watching us work or eat. Surely a white man's ways must seem strange and wonderful to their native minds.

At Nelson's Island we found them busily at work fishing for smelts. Tons of these little, oily fish were raked up on the beach and then taken in hand by the women, braided with grass into long strings and hung up to dry.



"ON OUR RETURN TRIP TO NOME WE SHOT A WALRUS BULL AND STOPPED TO CUT OFF A PAIR OF LONG IVORY TUSKS."

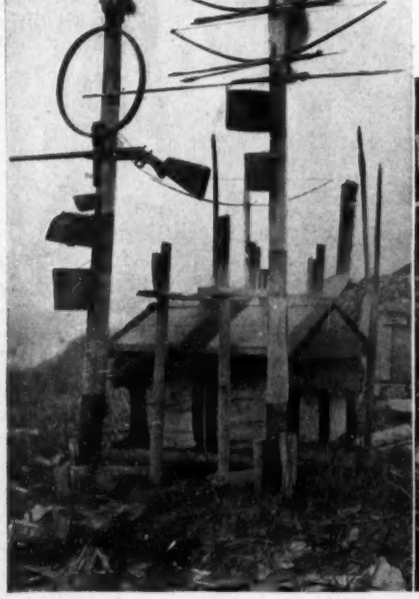
On the side hill back of the village their interesting graveyard was located. When an Eskimo dies, his spirit goes to another world. According to their belief it is a very material world and he should be well equipped for his journey and future existence; therefore his worldly possessions are deposited on the grave. The body is dressed in the usual hunting costume of artega and mucklucks, wrapped in the deceased's blanket or deerskin sleeping bag, which in turn are wrapped in his tent or some canvas. This is placed in a box or bundled in an old walrus hide and placed upon a platform elevated on sticks, or on the surface of the ground in a box. Under or alongside the grave are placed the hunting paraphernalia, spears, traps, bow and arrows of the departed,—sometimes even a good rifle to enable him to enter his new life well equipped for the hunt,—some pots to melt snow and plates and cups with which to eat his meals, a pipe, tobacco and matches. If the deceased is a woman, pots, pans and sewing articles are seen on the grave. It is a deplorable practice, for they will hang a brand new rifle or shotgun on the grave to rust to pieces while the children of the deceased go hungry for lack of a weapon to hunt with. On Nelson's Island a fine lamp and can of coal oil stood on a newly made grave, while the departed one's children were sitting around a miserable coal oil lamp.

On our return trip to Nome we shot a walrus bull and stopped to cut off of him a pair of long shiny ivory tusks, measuring two feet in length. The weather was rather rough and foggy, but when the land loomed up within a mile we found we had steered a straight course and were close to the town.

Two days' stay was sufficient to take on fuel, water and supplies, and our trading goods, which during our absence had arrived from Seattle on the steamer Victoria.

After clearing at the custom house we plunged with high hopes and expectations into the unknown, unexplored, mystic future, and headed for the desolate, cold, clammy coast of northern Siberia. We expected to press on farther north than any boat had yet been; our propellers were designed to churn virgin waters never before disturbed, save perhaps once by the keel of the Vega, under Nordenskjiold. Full well I knew what lay before me; the little Diamond L would have to weather many a gale and the ever-pressing, jostling ice floe would be a continuous menace throughout the whole trip. Many a wreck lies on that coast, while the Arctic blizzards play weird music on the giant harps of bleaching ribs from many a boat. Six boats were crushed in the ice last year, but the staunch little Diamond L has returned with only a few scratches on her paint.

We had hardly taken aboard all necessary goods when a heavy southeast wind sprang up, rolling heavy seas onto the Nome beach. The crew, consisting of an engineer, a Russian deck-



ESKIMO GRAVE, NELSON'S ISLAND

ESKIMOS BRAIDING FISH AT NELSON'S ISLAND

AN ESKIMO BEAUTY

hand and an Eskimo boy I had picked up, were already aboard, but I could not leave before clearing at the custom house, where I was impatiently waiting to get my papers, go out to the vessel before the surf became too high, weigh anchor and get away.

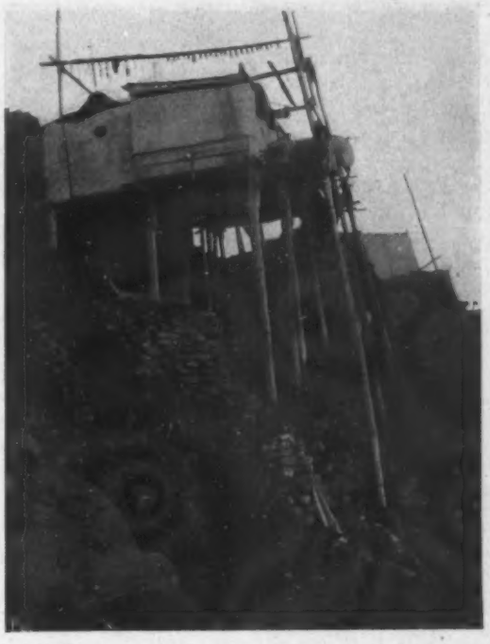
At last I got my papers, but the surf was too high to attempt to go out in an ordinary ship's boat, so I had to requisition the services of the life saving keeper and two of his men to get me aboard. Then we started the engines, hove up the anchor and plunged into a raging, boiling sea. As soon as we were a few miles off shore we had a leading wind for King's Island, in whose shelter we arrived the next morning. Its slate and granite walls, seven hundred feet in height, rise precipitously out of Behring Sea, forming an island one mile by one and a half miles square. There is not a foot of level beach on the whole island. A small boat has to land during perfectly calm weather alongside the steep rocks and these are only accessible in a very few places.

During the nine winter months, King's Island is enclosed by the impenetrable barrier of polar ice pack, while during the three months of summer it is usually shrouded in fog and washed by the turbulent waters of Behring Sea, the grim, frowning, unscalable walls forbidding approach except on very calm days.

"THE ARCTIC BLIZZARDS PLAY WEIRD MUSIC ON THE BLEACHING RIBS OF MANY A WRECK"

On one side the granite rock has split and crumbled the walls to an angle of 45 degrees and here the Eskimo has had the audacity and hardihood to build himself a home, or rather a perch. In his open skin boat he has brought poles of drift wood forty miles from the mainland, erected a platform on stilts, on it built a boxlike frame of poles and over this stretched thick walrus hides ingeniously laced and padded.

For two months in the summer he leaves his rocky aerie and has a vacation on the mainland, gathering berries, catching salmon and trading his polar bear skins and ivory curios for a few sacks of flour. Then he returns to his island home for another nine months of isolation. Often he has to wait for weeks to cross in safety and be able to make a landing. Yet he clings to his mid-ocean rock pile with as fervent a love as the Swiss to his Alps. Nature's law, perforce, has made the King's Island Eskimo the most skillful boatman and daring hunter of his race.



ESKIMO IGLOO ON THE STEEP SIDE OF KING'S ISLAND

Most of the male inhabitants of this little island village had been with me on walrus hunts and the Diamond L was known to every woman and child, so they made daring efforts to come out in their frail little kyacks to see me.

The village was located on the weather side, while we lay on the lee side of the island, consequently those who did not want to drag their skin boats up to the top of the island and down the other side had to be thrown from the cliff into the boiling surf. Four men take hold of a kyack with its occupant laced in the hole in the center of the boat and throw him from a rock out into the sea. Only an expert can keep his seat, paddle out and around to the lee side.

The side opposite from the human rookeries is one immense bird colony. The Paraquet, Crested and Least Auklet breed here by the million, laying their eggs in deep crevices or in burrows dug in the ground. The Pallas Murre and the Gullimote lay their eggs on bare, rocky ledges. Discharge a gun and a cloud of birds descend from the mountain side, scattering many eggs down on the rocks below in their hurried departure for the open sea.

CRESTED AUK IN THEIR AERIE ON KING'S ISLAND

I wished to get a couple of Crested Auks in their nuptial plumage and I also had an irrepressible hankering for another shot at auks on the wing. To those who have shot the clay pigeon on every known, or unknown, angle, dropped the blue rock like a plummet, followed with the eye the corkscrew flight of a snipe or taken snapshots at the quail or pheasant in the thick timber—let me state an honest fact—there is no greater wing shooting to be had than that at auks on one of the Behring Sea islands. Standing on a rocky ledge high above the sea, these little birds, coming or going, give you every angle known to a mathematician, while the speed at the same time varies from a slow drooping flight to the speed of lightning.

Some, coming out of their holes, will drop like a plummet to the water below, others will soar in the sky, circling around the peaks of the island, others will shoot off like a bullet in any direction. When returning to their underground burrows some will drop perpendicularly out of the sky. Few men have had this kind of a shot, while an equally strange shot is to have a bird come soaring up to you from 400 feet below. To think of it makes me yearn to be back at the old stand.

Next day we left King's Island in a dense fog, setting our course for East Cape, the rocky promontory of our neighboring continent, Asia. We knew we passed close by the Diomede Islands by the presence of millions of birds of the types that breed there. It was daylight now for the full twenty-four hours. By one A. M. the fog thinned out and we saw that we were abreast of East Cape. Full glad we were that the fog had lifted, for a heavy sea was rolling through the Straits and when we rounded the corner the sea was juggling with huge cakes of ice and tossing us like a cork.

"OUR WAY WAS BLOCKED BY A SHEER WALL OF ICE TOWERING ABOUT 8 FEET ABOVE THE DECK OF THE DIAMOND L"

It is strenuous work for the steadiest nerves to steer a boat clear of the dangerous, tossing ice lumps in such a heavy sea, for if driven against one the ice would break any rib or plank of our little motor boat.

Off the village of Walen we met the first heavy Arctic floes, but zigzagging amongst the pack the sea soon became smooth.

While going through the rough Straits our Eskimo boy became very pale and showed symptoms of sea sickness. My engineer said to him:

"What's the matter, Charlie?"

The boy replied with a woe-begone face, "Oh, my inny-side plenty walk him round."

A while later I asked, "Well, Charlie, your insides going round yet?"

He replied, with pale blue lips, "Oh, my inny-side capsize."

From East Cape our course lay northwest along the Siberian shore. The wind, a gale of nearly seventy miles an hour, was off shore most of the way and had set the ice off shore also, leaving a lane a mile wide in most places, but where we had to round an outjutting cape there was barely room for the Diamond L to squeeze through and her shallow draft in many instances was the only thing that enabled us to glide over the ragged rocks in the shallow water along the shore. Shallow draft is, in fact, the only safeguard on this coast against being crushed by the ice when the wind veers around and presses it against the shore.

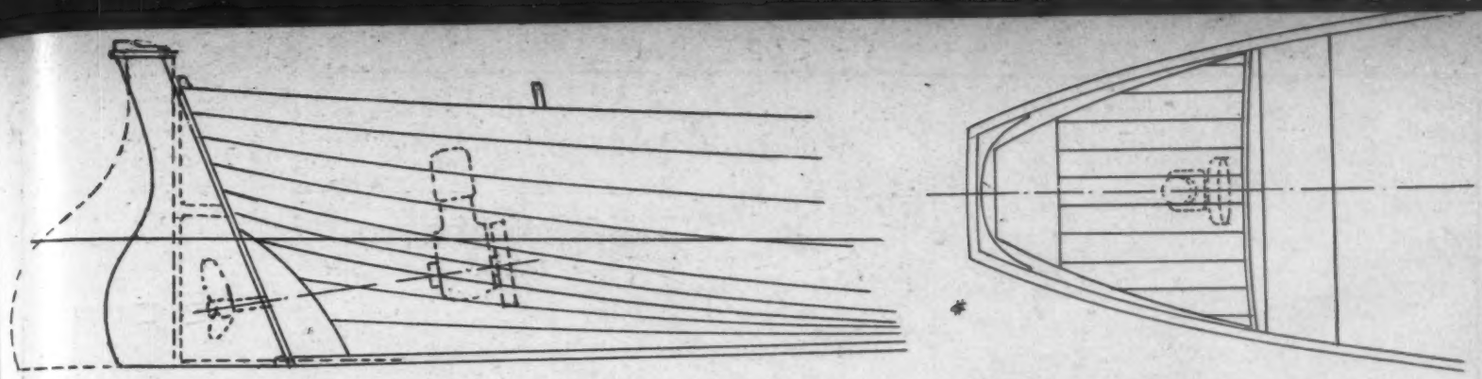
On July 11th we stopped at Utan and on July 12th the Diamond L crossed the Arctic Circle at Cape Unikin. The next day we left Unikin and being forced by the ice to keep close alongside the beach we made for Cape Serdze. The wind had died down, the ice had slackened up towards shore and the only water we found was among the heavy grounded ice near shore. The 24 hours of daylight of the thirteenth we spent trying to work up to Cape Serdze; the fourteenth found us in a similar predicament to that of the mountain climber who has toiled and taken a hundred chances to reach the summit only to find himself in a dangerous position where he cannot get forward or back. We were wedged in between two large ice floes that we tried to pry apart with the boat. It was rather one floe rent in two, leaving a sheer wall of ice towering eight feet above the decks of the Diamond L. Another floe had swung around and closed up our exit; we could not turn around and it was impossible to work with the stern of the boat in the ice. If the wind had sprung up and pressed the ice we would surely have been crushed, for the perpendicular walls excluded any possibility of the boat's rising under pressure. We had gone into this trap because only a few hundred feet beyond was quite a stretch of open water towards the Cape.

We had tried all other places but could find no better chance for getting ahead than this one. Getting the highest power possible out of the engines and working with pike poles a half mile away from the boat to loosen the floes up we finally squeezed through. The open water did not extend very far and we kept on cruising, ramming and squeezing until finally we worked a half mile past the lower promontory of Cape Serdze. Four miles from here lies what traders call Gargon's Lagoon with an entrance of four feet of water, but it was impossible to get a foot farther, and we lay to alongside of a floe, our eyes heavy from sixty hours without sleep and our muscles aching from work.

Still there was to be no rest for us, for suddenly an on shore breeze sprang up setting the ice inshore. We felt ourselves borne towards the perpendicular face of the cliff, 900 feet high, against which we were doomed to be crushed. Hurriedly we took in the ice anchor and got under way, trying to retrace our course around the cape and get back to where we had started from. We had to try to save the boat, at least for a few hours or until the vagaries of the Arctic ice pack should open a channel for escape.

(To be continued)

THELMA-PLANE, A LITTLE HYDROPLANE THAT WAS ONE OF THE FEATURES OF THE RECENT JACKSONVILLE REGATTA



A Hint for Installing an Engine in a Rowboat

ONE of the chief difficulties that is encountered in installing a gasolene engine in a rowboat, or in a boat's tender, is in cutting away an aperture for the propeller. Often the skeg is not deep enough to allow room for the propeller opening and the bottom part of the transom has to be cut away and a horn piece put in. Sometimes the propeller can be carried aft entirely outside of the transom, but in this case the rudder has to be cut away to such an extent as to impair its efficiency.

The accompanying sketch shows how this difficulty can be overcome in a boat where the transom rakes aft as it does in most rowboats, if we except the small dinghies that have a plumb stern. Instead of cutting out an opening in the rudder or the skeg, an upright iron rudder post can be fitted from the upper end of the transom to an iron heel or shoe extending out from the under side of the skeg or keel, as is indicated by the dotted line in the drawing. This post is supported and stiffened by a strut extending out from the transom about half way down, leaving room for the propeller to work between this rudder post and the stern of the boat. The rudder is hung on this new post with pintles, as in the ordinary way.

If it is desired, this new rudder post can be made of wood instead of iron, cutting it out of one piece of oak about one inch thick. By means of a template it can be cut to fit the rake of the transom, that portion above where the strut shows in the drawing being of solid wood, the whole being bolted through the transom, the heel being held in place by an iron keel band as in the case of the iron post.

If the engine is installed aft, the after thwart can be moved forward, with a backboard, shutting off the engine entirely from the center of the boat, though in very small boats this is not as good a position for the motor as amidships, owing to the necessity of keeping the trim of the boat.

Prizes for Promoting All 'Round Handling of a Boat

Instead of offering prizes for only the fastest boat in the fleet, the Lloyds Harbor Yacht Club has offered this year a series of prizes for races which tend to develop all-'round ability in boat handling, a plan that other clubs would do well to follow, inasmuch as getting speed out of a boat is not the chief aim of yachting, and also because it does not put all the prizes in the hands of those who happen to own the fastest boats.

The Lloyds Harbor Yacht Club was organized in 1908 by a number of yachtsmen who used to rendezvous at Lloyds Harbor, on Long Island Sound, on their week-end cruises throughout the season, and not a week-end goes by from Easter until Election Day that does not find a number of boats flying the Lloyds Harbor Club burgee at anchor in the little harbor back of Lloyds Neck. The club makes a feature of a prize for the first yacht to arrive at Lloyds Harbor at the opening of any season and the last yacht to leave there, but it hardly needs this incentive to make the members get their boats in early and keep them in until the snow flies.

SEASON 1912, LLOYDS HARBOR YACHT CLUB

DOSCHER PRIZE: Offered for the first yacht to arrive in Lloyds Harbor during the season of 1912. Open to yachts owned or regularly chartered by members of the Lloyds Harbor Club. Motor dinghys and open speed boats are not eligible.

BENNETT PRIZE: Offered for a race for sail yachts and auxiliaries; course from New Rochelle to Lloyds Harbor; handicaps to be arranged by Executive Committee. Dinghys to be towed.

Start will be a line between Bailey's Rock Gas Buoy and Red Spar Buoy off Premium Point; finish will be a line between the Old and New Light Houses at entrance to Lloyds Harbor.

11:50 p.m. Warning gun or whistle. 11:55 p.m. Preparatory gun or whistle. 12:00 Midnight. Start gun or whistle.

BERTH PRIZE, June 2, 1912: Offered for skillful handling at start of a race; to be awarded to the yacht receiving the greatest total number of points in five starts; in each start yachts shall receive one point for starting and one point for each yacht beaten.

Use of light sail is prohibited; with this exception rules of Y. R. A. L. I. S. will govern. After crossing the line yachts must not cross back over the line, but must sail around either end of the line in returning for the next start.

KATTENHORN PRIZE, June 8, 1912: Offered for a race for auxiliaries; course from New Rochelle to Lloyds Harbor; dinghys to be towed.

HART PRIZE, August 31, 1912: Offered for a race for power yachts, from 35 to 50 feet overall, inclusive; course from New Rochelle to Lloyds Harbor. Time allowance to be 10 seconds per horsepower as rated by manufacturer, and 60 seconds per overall foot.

MOLLOY PRIZE, August 31, 1912: Offered for a race for sail and auxiliary yachts; course from New Rochelle to Lloyds Harbor; handicaps to be announced later. Dinghys to be towed.

HOUCK PRIZE, November 2, 1912: Offered for a race for sail and auxiliary yachts; course from New Rochelle to Lloyds Harbor; handicaps to be announced later. Dinghys to be towed.

MARSLAND PRIZE, November 4, 1912: Offered for a race for sail and auxiliary yachts.

Course: From the beach at Lloyds Harbor to and around Gas Buoy off Beaux Arts, thence across finish line between Old Lighthouse and Committee Boat, yachts to come to anchor and one man of crew to return to beach at point of start.

At time of start yachts must be anchored inside of a line between Old Lighthouse and Committee Boat, with sails lowered and at least two stops around mainsail; yawls and ketches may have mizzen set. Start to be made from the beach in rowing tenders, owner and all of crew with the exception of one man to be on the beach at time of start. Tenders must be towed.

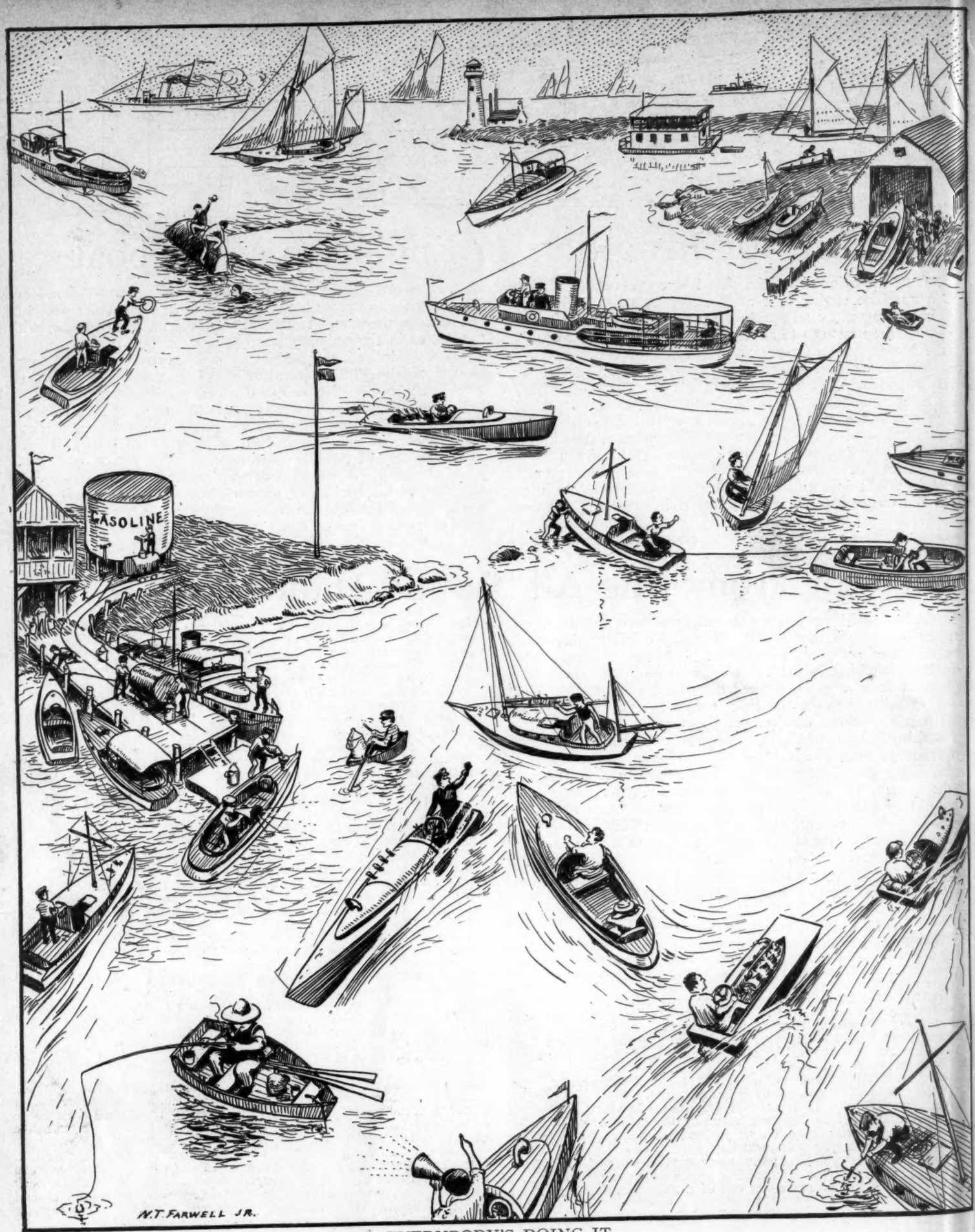
VOLTZ PRIZE, November 5, 1912: Offered for a race for sail and auxiliary yachts; course from Lloyds Harbor to New Rochelle; handicaps to be announced later. Dinghys to be towed.

STODDARD PRIZE: Offered for the longest trip from New Rochelle to Lloyds Harbor; to be no stop over in any harbor, but boats may anchor if necessary. Any boat belonging to a member eligible.

SULLIVAN PRIZE: Election Day Cruise: Offered for a rowing dinghy race to be held in Lloyds Harbor during the Election Day Cruise. Open to members of Lloyds Harbor Club only; men to draw lots for dinghys; if number of dinghys is less than number of entrants, race will be run in heats.

TUCKER PRIZE: Offered for the yacht doing the greatest amount of towing of members' boats to or from Lloyds Harbor during the season of 1912. Members shall keep a record of yachts towed, and the number of miles of towing they actually do, and turn same into the Executive Committee immediately after the Election Day Cruise.

MYRICK PRIZE, September 2d: Offered for a race on Monday, Sept. 2, 1912, from Lloyds Harbor to and around Lloyds Bell Buoy, leaving same to port. Actual start 9 a.m. Conditions: All boats to be at anchor back of the lighthouse line, mainsail and jibs down with three stops around mainsail. Yawls and ketches may have mizzen set. All members of crew must be in cockpit at first gun or whistle. Finish at same line.



EVERYBODY'S DOING IT

A Van Load of Fittin's

A List of Those Articles of Motor Boat Equipment Required by the Government, as Well as Those Necessary for the Proper Navigation of the Boat

By WARREN H. MILLER

"IT'S hard to keep a good man down," soliloquized the whale when he cast up Jonah, and that is exactly the way Uncle Sam's inspector feels when he finds some enthusiastic motor boatist running foghorn-less, light-less, lifepreserver-less and heaven knows what else-less—but he has to collect the money just the same. Force of habit.

Here's a playlet for you:

Dramatis Personae:

The Inspector: A sardonic humorist in navy blue regalia.

The Owner: Newly-overboard, dead busted and not a thing but green.

The Crate: Built by a furniture company and bought in a department store, "all ready to run."

Props: A harbor, customs launch, etc. Four toots heard from launch's whistle.

A hail—Heave to, there, cheesebox; this means you!

The Owner—What's eatin' you? I've nothing dutiable aboard.

The Inspector—We're comin' alongside to take out y're works an' see whatever makes you acts so (*comes over the side*). Le's see y're runnin' lights; hev ye got any a-tall, a-tail?

Owner—Er,—no; but we've a cook for'd with one flaming red nose and two green eyes. Wouldn't he do if we stood him up in the bow and made him close one lamp.

Inspector—That'll do, pickleheimer; one hundred bucks. Got airy life-preserver?

Owner—Stacks of it, in the ice-box for'd; it's all yours.

Inspector—(*testing whistle*)—H'm;—one-second squeak. Got a foghorn?

Owner—Sure thing! Jim, here, can beller like an Alabama coon when he gets his head into a close-harmony chord. Wrecks it every time.

Inspector—(*holding out hand*)—I'll hev ta hand it to yer; one hundred bucks fine, me bucko-laddy——

Owner—Wh-a-a-tt!—(*collapses*). Awk!

Inspector—(*unmoved by dire spectacle*)—One hundred dollars fine, young man; th' law says two-fifty, but we'll let it go at that, f'r bein' at large without side lights, life-preservers, foghorn and I don't know what all besides.

(*Long, panicstricken pause.*)

Owner—Here, officer, take my boat. She's all I have in the world. (*Business of sobs.*) She isn't worth a damn, but we'll call it a hundred for my health's too frail for me to go to jail. (*Heavy tragedy.*) Lead me, ye guards,—to sign th' papers that part me forever from my che-ild-h——

(Curtain; audience expires.)

And so the customs lucky-bag is cumbered with one more lemon-crate, and all for the lack of a measly foghorn. There's money in it.

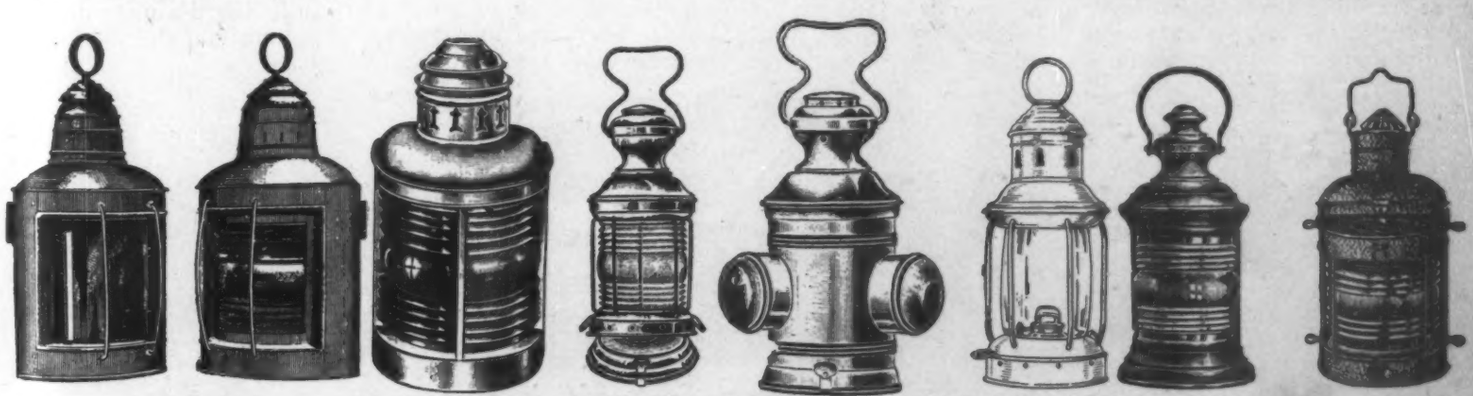
At present the government inspection requirements cover three classes of power craft: under 26 feet overall measurement; under 40 feet, and between 40 feet and 65 feet.

In regard to lights, boats in the spit-kit class (No. 1) under 26 feet are allowed to use a combination red and green lantern forward for side lights with a five-inch division plate between them so as to throw the light from right ahead to two points abaft the beam on their respective sides. Astern you must hang a bright, white light showing clear around the horizon, and placed higher than the combination light forward.

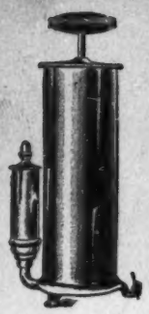
For motor boats between 26 and 40 feet the port and starboard running lights must be separate lanterns so placed in screens as to show the light from dead ahead to two point abaft the beam, and the screens are usually painted green and red inside, though the law does not expressly require it. The best material for them is ⅞" dressed white pine and they must be eighteen inches long for the 26-40-foot class, and of sufficient height to prevent the lights from being seen across the bow. Bolt them to the deck with brass carriage bolts through the roof carlines, for nothing is more conducive to assorted profanity than to have your screen and its precious lantern wiped overboard by some unfeeling dock stringer or boat boom—which it surely will be if your screens are only screwed to the ceiling planks.

Side light requirements for cruisers above 40 feet (Class 3) call for 24-inch screens, and, in everything except Class 1, fresnel glass lenses are required. In Class 2 they must contain 16 square inches and in Class 3, 25 square inches. You can use plain glass lights for small launches, but one experience with them will cure you. Imagine a pale, sickly glow behind a green or red pane and you have the effect of plain glass precisely. Such a light is dangerous to carry. With the fresnel glass all the light rays are thrown out horizontally, which is just what is wanted, and what you see is a bright vertical bar of light the entire height of the glass that will throw a full glare when the other shows a mere colored speck.

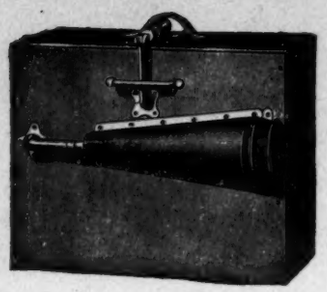
For both of the larger classes the bow light must be clear white fresnel glass, set as far forward as possible and throwing an unbroken light ten points on each side of the vessel. This must contain a lens of 19 square inches in Class 2 and 31 square inches in Class 3. The stern lantern shows a white light clear around the horizon. If your craft is an auxiliary yawl your white light astern may hang from the mizzen masthead or spreader and the bow white on the mainmast just above the gaff jaws.



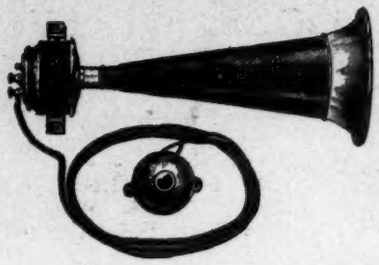
Regulation side lights. Combination red and green side light. Anchor light. Combination bull's eye side lights. Stern or anchor light. Two styles of bow lights.



Hand air whistle.



Bellows fog horn for making a real noise.



One of the many types of electric horns.

Rotary air whistle operated by friction with the fly wheel.

Air whistle outfit with pump attached to propeller shaft.

This stern light is also available as your anchor light if desired while cruising and also in home waters, unless you are an inner boat at your home anchorage, when an anchor light may not be required. It is wise, however, to have a regular stern light in addition to the anchor light.

The four lights in polished brass will stand you from about $12 for the set up, according to the size.

The government's requirements for running lights are based on the Rules of the Road used for inland waters of the Atlantic and Pacific coasts. Some obscure poet has set the Rules of the Road to rhyme and every motor boat owner should commit them to memory, for the little jingles are easy to remember and impossible to get wrong as the meter will not jibe if you get port and starboard mixed They start:

Meeting vessels do not dread
If you see three lights ahead.
Port your helm and show your Red.

A merry jingle, and it may be worth a whole lot to you some dark night when there's a big fellow coming right at you and there is scant time to do any mental calisthenics as to just what is the proper caper. It also explains the light screen regulations, because with a long screen it is impossible to see three lights except when head on, and you can govern your course accordingly. With the combination light used on Class 1 boats you can see both port and starboard at a considerable angle off dead ahead and you are thus likely to be misled into changing your course so as to steer right into her, but as small boats are quick on the helm the danger is less than with larger craft. The old combination side lights with bow white in the same lantern formerly used on small boats gave practically no chance to judge how the other fellow was bearing, besides which the white obscured both green and red. The raised white stern light of a Class 1 boat obviates this.

Auxiliaries when propelled by sail and machinery, or under sail alone, shall carry the colored side lights suitably screened but not the white lights prescribed by this regulation.

While on the subject of lights, let us take a fancied trip across a busy harbor at night. Here is a single white light, dead ahead. He can't be anchored for it is the fair-way of the channel, and he can't be a sail craft for they carry no white light. It must therefore be the stern light of a motor boat and as you are overtaking him it is up to you to keep clear. Here is a red light crossing ahead of you with a white bow light showing and a stern light high above the deck. That's an auxiliary yawl going under her power. The stern light is in her mizzen spreader and she is crossing at right angles, for you can see her bow light. It's up to you to keep clear of her. Over yonder is a big green light, a white one and three white lights in a perpendicular string astern. She must be a tug with a tow 600 feet or more astern of her. You have the right of way but she will pay no attention to that, for business is business and you are out for pleasure, so look sharp for the white stern light on her last canal boat. Here comes a stranger with only red and green showing,—a sail boat head on, keep clear of him no matter what his course, for sail boats always hold the right of way over power craft. Yon is a curious glow moving over the black water. Don't get panicky,—it's not a ghost but a perfectly harmless yacht's dink with a lantern in the bottom. Keep clear of him.

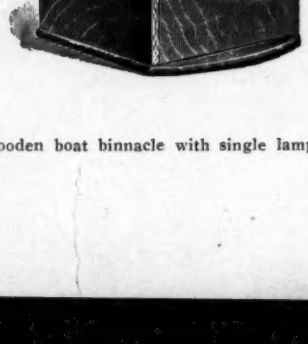
Now the tug is giving the "double-two";—*toot-toot!—toot-toot!* This means that she has noticed that someone's running light is out. Don't stand there gaping like a man paralyzed from the legs down. It probably means you; get forward at once and look to your own running lights before you scan the whole harbor to find who is the guilty party. And so it goes!

And this brings us to noise-making devices—bells, whistles foghorns—all prescribed by the regulations. The law provides that "Every motor boat of Class 2 or 3 shall carry an efficient bell which shall not be less than 8 inches across the mouth on vessels of Class 3."

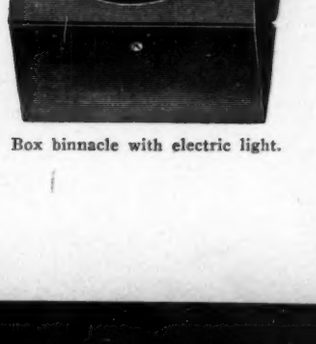
"Every motor boat of Class 2 or 3 shall carry an efficient foghorn."

As to prices and selections, you can get a first-class 8-inch bell from $2.50 up in brass, polished and plain, and a three-foot tin foghorn for 25c., so you might as well go equipped to make ten dollars worth of noise with them whenever the fog closes down over the Sound, along about five o'clock of a clear summer afternoon. And don't work both of them at the same time, as Kipling makes his fishermen do in "Captains Courageous." The bell means that you are anchored in the fog and the horn that you are under way,—impossible to manage both successfully at the same time without tearing yourself apart. The bell should be rung for five seconds every minute, and be sure and do it on time or they will conclude that there are two of you. While you are about it better get a bell that can be heard a piece up windward. There are any variety of patterns on the market and some very good ones of novel design.

Metal life boat binnacle

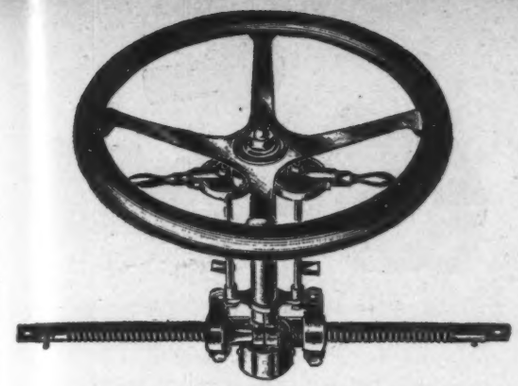


Wooden boat binnacle with single lamp.

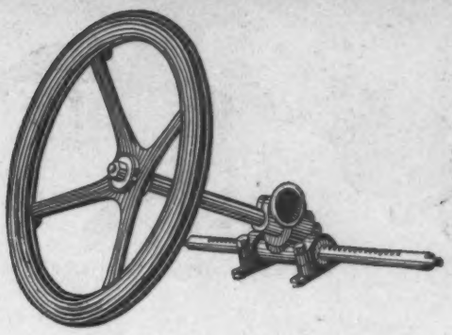


Box binnacle with electric light.

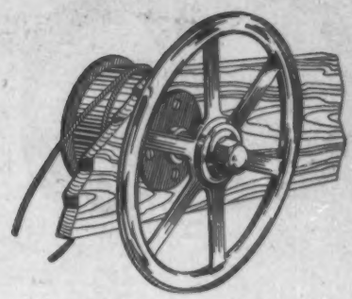
Brass binnacle.



Automobile type of steering wheel with spark and throttle control.



Automobile type steerer with adjustable shaft.



One type of coaming wheel.

When creeping about under way in a fog give 'em the horn once a minute, or your whistle if it has a respectable voice. An efficient foghorn is one of the bellows type such as are used by the Gloucester fishermen and the coasting schooners.

As regards whistles, the law now requires a two-second blast from a mechanical appliance, which can be gotten in moderate strength with a 12-inch hand pump whistle costing about $1.75 in polished brass. A single whistle is better than a chime since it uses less air per cubic yard of noise. As sold, the whistle is usually sequestered at the base of the air pump, wherefore get a few feet of brass pipe, ⅜" iron pipe size, and run it up the bulkhead panelling so that the suppressed and discouraged whistle can speak above deck and let any man with ears on his bean know that you're around and have your breath. The eighteen-inch whistle I do not like as it is cumbersome and awkward to handle and one never has time to get a satisfactory squawk out of it in a tight situation.

It is far better, however, to get one of the electric horns, which

By all means get bronze wire cored tiller rope.

can be operated from your electric ignition equipment, or an air compressor and whistle tank. In fact, for 25 feet or over in the power cruiser class the skipper should be content with nothing less, as he will use a short loud toot more than any other day signal and with the hand pump one can't even approximate this.

A small air pump or waste exhaust device is no great matter to install, in fact you can buy the former arranged to go right on the propeller shaft without uncoupling. The air tank should be able to stand 40 to 60 pounds pressure to give you a sharp, satisfactory blast and one of these little pumps will fill a ten-gallon tank at that pressure in from 8 to 10 minutes and give you a blowing pressure in half a minute.

Don't use the whistle unnecessarily; it's a bad habit to get into. Rapid work is sometimes necessary and calls for good pressure on the whistle and a mere touch to blow it—which the hand pump cannot give.

Further requirements of the law are: a life-preserver for each person in the boat, including the crew, children and babies; a fire extinguisher capable of effectually extinguishing burning gasolene; and two copies of the Pilot Rules. Life-preservers must bear the government approval. Buoyant cushions will be passed if they will sustain a downward pull of 20 pounds. No such life-preservers or buoyant cushions stuffed or filled with granulated cork or other loose granulated material and no pneumatic life-preservers or cushions will be approved.

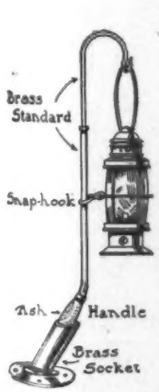
Planks, gratings, floorings, oars, small boats in tow, etc., are not approved as substitutes for life-preservers, life belts, buoyant cushions, or ring buoys, but wooden life floats may be used, provided their dimensions shall not be less than 4 feet in length, 14 inches in breadth, 2 inches in thickness, and made of well-seasoned white pine, or of any other wood not exceeding white pine in weight per cubic foot.

The pilot rules come in pamphlet form for small motor boats, and in a chart for framing and posting in some conspicuous place for boats over 40 feet. A copy will be sent free on application to the nearest local steamboat inspection office.

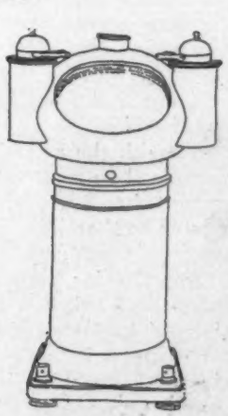
There are at least a dozen good brands of squirt-gun fire extinguishers on the market, all guaranteed to put out a gasolene fire—and most of them will. The government specifies about that number by name.

In putting out a gasolene fire with the squirt gun, a series of small spurts rapidly distributed is most effective. A big pool of burning gasolene can be put out as quickly as a small spot, but it has a most annoying way of catching again unless the man behind the gun is here, there and everywhere to give it a dose now and then until the last bit of fire is extinguished.

So much for the legal "fittin's" required; now let us look over another collection which old Father Antick the Sea insists that you shall have with you, if you don't want to get nabbed by Mr. Nep some day and be hustled off to Davy Jones' with a

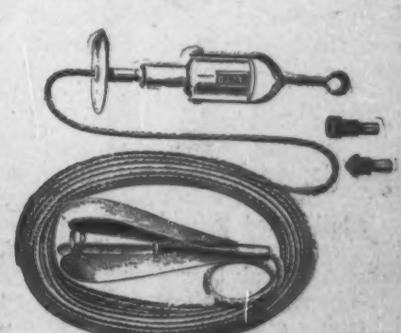


Standard for stern light.

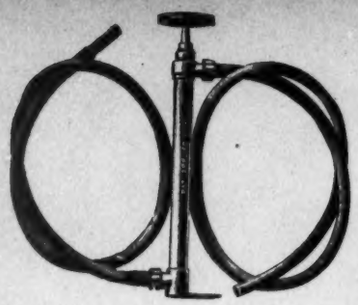


Two types of brass binnacles.

Liquid compass mounted on gimbals in portable box.



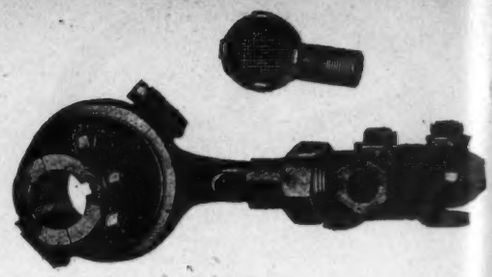
Combination taffrail log and speed indicator which can be used to get the engine revolutions.



A hand bilge pump which will draw water from any part of boat without changing location of pump.

A rotary bilge pump that can be attached to a bulkhead in the cockpit.

A bilge pump operated by propeller shaft.



Power bilge pump operated by eccentric on shaft.

life-preserver wrapped around your feet and three quarts of sea water in your bosom.

First, the anchor. You ought to have two of them if over 30 feet L. W. L.; a stream-anchor for ordinary cruising and a sheet anchor to proffer when there's a hell's-to-pay gale blowing and an expectant nest of rocks awaiting you just under your lee quarter. For a stream anchor in tidal waters 1½ pounds per foot of overall length of your boat is a fair rule-of-thumb weight and two pounds for the sheet anchor. The latter figure is better for the stream anchor if your craft has high top sides and an inveterate habit of gamboling all around the hook in a brisk breeze. It's playful and amusing to look at for nearly everyone but the owner, who can bear it with better grace if he *knows* that his hook is big enough.

The material that your anchor is made of is also of more than trifling importance. If you use a kedge anchor for your best bower, get it of wrought iron,—not malleable,—or old Nep will grin in his beard, for he can foresee the time that you will be depending on that hook and he knows just where she's weak—where the shank joins the crown. If you once bend it there,—and you are always bending an anchor—it needs but the tap of a sledge to make it fall apart. Malleable is, of course, cheaper than good wrought iron work, but for a one-piece anchor they are dear at any price when you are depending on the hook to keep $3,000 worth of boat off the rocks. You can always tell one from the other, for your wrought anchor will show hammer marks at the weld of shank and crown and the malleable is smooth and apt to be a bit fringy along the edges of the fluke, since never a hammer has been laid on her. A wrought iron galvanized kedge anchor will stand you about 11 cents a pound. If you are crowded for room, or have an anchor of over 70 pounds, the stockless variety with swinging malleable head, or the folding anchor, has the advantage over the kedge for compactness. They cost about 16 or 20 cents a pound, respectively.

The next thing to do is to "tie" on the anchor rope with a fisherman's bend and seize the hang-over with a few turns of marline. Nothing smaller than 2½-inch manila for boats from 25 to 40 feet and not less than 150 feet of it, for many a time you will have to anchor in 30 feet of water in a ripping tide way, and then you will need a scope of at least five times the depth.

To get all this over the side, you need four chocks, port and starboard, bow and stern. If you have plenty of time to putter around the boat and don't mind hard work with the putz box, get them in polished brass, but if they once get a good coat of green oxide they might as well be galvanized iron for you'll never get up energy enough to make them shine again. However, the important thing is to secure them properly. Please remember that the chock takes the full impact of a couple of tons of boat tugging viciously at an obstinate anchor, so don't screw them down with a couple of two inch brass wood screws let into the extension trunk cabin planking. See that you have a proper oak bill-board to port and starboard, bolted to the carlines and bitt braces, and bolt the chocks through breast hooks, clamps or other solid oak bow timbers.

The next bunch of fittings that the sea has an inquisitive way of trying out comprises the entire steering gear from the wheel to the rudder. There will be times when you will have to snake that boat around on her own tail, so don't be niggardly about the size of your rudder. There is nothing more comfortable to a proper sailorman than a ship quick to mind her helm. Have a good stout shoe running out from the skeg to take the heel of the rudder post. The kind of rudder that swings free looks pretty on the showroom floor but loses all its good looks when some chump backs her up on a wad of rocks and puts a wry-necked slant on the free-hung post.

For small boats up to thirty feet, the red tiller rope with the wire core is the thing, and see that it has turnbuckles to port and starboard put where they can travel the full route without jamming. The amount of slack that can accumulate in a tiller rope must be experienced to be appreciated. The red rope costs 6 to 8 cents a foot. It will be even better if you get the waterproof, bronze-cored tiller rope, which is impervious to dampness and is very strong. It will pay for itself in its strength and durability. Plain wire rope is the only thing for heavy boats above 35 feet. And look out for the sheave blocks upon which you depend to lead the tiller rope forward to the steering wheel. Not only should they be securely bolted or lag-screwed so as not to pull out at a critical moment but they should be big enough to handle the rope easily.

Tillers in plain galvanized iron in 10, 12 and 14-inch sizes cost from 75c. to $1.50 and in quadrant shape for larger boats $5.00 up in 15 and 18-inch sizes, plain brass, and $2.00 up in galvanized iron.

Your steering wheel may be anything from a little 5-spoke, 8-inch polished brass wheel costing from $1.75 up, to the combined binnacle and steering wheel on a shiny brass post, standing you somewhere around $100. A 12 to 16-inch wheel is plenty good enough for anything up to 30 feet, and a size or so larger will do the trick up to 60 feet and over. The drum is the point of danger. See that the brass pin it turns on is securely fixed to its shoe and then see that the four bolts passing through the shoe have something more substantial to bite on than a ½-inch cabin panel: also see that the drum will hold turns enough of your tiller rope to swing the helm clear over either side of amidships,—and a little more.

Automobile-type wheels are very much the vogue at present and are very convenient for launches and open boats. They are made with either stationary or adjustable shaft and with polished wood rims, with rack and pinion instead of a drum, and frequently have the spark and throttle control brought up to the under part of the wheel. They come in prices from $6.00 for the 10-inch size, up. There are also a number of combing steering wheels for use on the side of a boat whenever it is desired to steer from that position.

As to the binnacle and compass, a 2¾-inch dry compass in a 5-inch box with the usual swinging gimbals is the smallest thing you can afford to own. It will cost you about two dollars. A dry compass, however, is not of much use on a motor boat as it is so unsteady that it is hard to steer a course by it. A liquid compass is far preferable, and is worth the difference in price (from $8 or $9 for the smaller sizes, up). Get as large a card as your pocket-book can afford at least a 4-inch one and larger if possible. The larger the card the easier to steer a true course.

As you must be able to read this at night some sort of a binnacle must go with it. One way is to put a pane in the cabin panel and mount the compass inside with a cabin lamp near it. It is a good kink, and the light will not bother you by

(Continued on page 534)

Keeping the Log

How to Put Down the Data Necessary to Keep Track of Your Boat's Position

By CHARLES H. HALL

ABOARD ship the history of each day's happenings, with the courses steered, speeds, notes of the weather, and all observations, is written in a volume called the Log Book. This record of events may be kept with great detail, as the navy regulations require, or may be reduced to a few brief notes. In deciding on the form in which the log is to be kept due regard must be paid to the conditions of use. A battleship's log book is written up with greater fullness than the record of a torpedo boat. So also the form suitable for a large steam yacht would not be a proper one for a small motor boat manned by an amateur crew.

For the average Corinthian to attempt a man-of-war log seems a tremendous undertaking, yet if done systematically an approximation to it will require astonishingly little effort. Nevertheless it would be needless labor to record all the minutiæ of the day's proceedings, with the wind, weather, etc., from hour to hour. But the more that is set down, the greater will be the pleasure in reading over the record of past cruises, and the simpler it will be to collect a claim from the underwriters in case of damage.

Whatever form is adopted should be kept regularly, as it is annoying, to say the least, to find the log of one watch entered in good shape and that of the next almost a blank. It should be remembered that entries must often be made at night and in wet weather, so the form adopted should not be too ambitious, lest there be frequent gaps in the record.

One thing to bear in mind is that the log is, or should be, an inviolable record; an entry once made must not be erased or altered, or the value of the entire history is lessened. If a mistake be made let the original entry stand and write the correction above it or in the margin, with a line through or around the erroneous note. If reasonable care is taken with times, courses, bearings, etc., the mistakes should be very few and usually easily noticed and corrected.

There is a certain minimum that must be set down if the log book is to have any value for navigating. This comprises times, courses and speeds or distances. The time referred to is the time of any event, such as getting up anchor, letting go anchor, changing course, sighting a lighthouse or other landmark, stopping or slowing the engine, taking a bearing or making a sounding to fix position.

The course should be the course steered, with the magnetic course also. The speed must be the actual speed through the water, derived, in the case of a power boat, from engine revolutions compared with a carefully made Speed-Revolutions curve, or else from patent log, chip log, or a tested speed-indicator. The ordinary *guess* speed is worse than useless. There should also be a column for remarks. Such a log may be kept in a form like this:

Time	Course C. M.	Course P. C.	Speed	Remarks

It may be kept in a small note book (preferably with pencil attached), using the left-hand page for the first four columns and the right-hand page for the fifth. The book should be well made with good paper and a binding that will not disintegrate with the first few drops of water that strike it. It should be of decent size so that the entries need not be crowded. Remember that entries must frequently be made by the faint light of the binnacle lamp or the rays of a deck lantern. Sometimes the book must be held under the skirts of an oilskin coat while brief notes of bearings are hurriedly jotted down.

The above example may be considered merely the dry bones of log. A more ambitious form is given below, though some of the columns will doubtless be found blank after a rainy, blowy night. Still, so many entries may be made with symbols that a little effort will keep the record well filled.

Such a log approaches the standard of a naval vessel or large deep water ship, and contains the necessary data for the navigator. Those who have turned out for the middle watch on a black night will appreciate the value of such a history of the previous watch. How often the man relieved has simply pointed out a light or two, giving no idea of distance or bearings taken, yawned, and gone below for a "caulk." For all the information transmitted the boat might be miles out of her proper position and making but a fraction of the usual speed. But where the log has been kept in good style the new "officer of the deck" can check up the position and speed, get some idea as to weather probabilities, predict the time of sighting lighthouses and the bearing on which to look for them, and, in general, navigate with confidence.

TIME	COURSE C.M.	COURSE P.C.	SPEED	R.P.M.	PAT LOG	WIND		SEA	WEATHER	CLOUD	BAR.	REMARKS
						DIRECTION	FORCE					

FORM OF LOG USED ON A LARGE SHIP

The form illustrated above contains a number of columns. The first, headed Time, refers as before to the time of any event. If these events (anchoring, changing course, etc.) are regularly entered in the Remarks column the Time column will contain only the hours at which the weather observations are made. When different men take charge successively the same watch or clock should be used for navigating, or all their watches set to the same standard.

"Course C. M." is the *Correct magnetic* course as obtained from the chart, with variation alone allowed for. "Course P. C." means course *per compass* and refers to the course actually steered after making corrections for deviation, tidal current, leeway, etc.

While anchored, the course columns should have the entry "At anchor" and the direction of the boat's head may be noted so that one can tell when she swings. In crooked channels some general note such as "Standing down East channel," or "Entering Harbor," may be made as the vessel is being *piloted*, not *navigated*.

The fourth column, Speed, should have the speed in knots; don't confuse this with the speed in statute miles, but get the habit of using nautical miles for distances and knots for speeds for all navigational work.

Column five, R. P. M., need not be completely filled, as the engine revolutions should not vary greatly unless weather and sea conditions change. Taking the engine revolutions once or twice during a watch should ordinarily give sufficient data.

The entries in the sixth column are important; and the patent log (if used) should be read and noted every hour and at each change of course, on passing every light, at the time of each sounding (for fixing position), when taking bearings, etc. If the patent log is correct, or if its error be known and applied, an unsuspected or improperly estimated current will be discovered in good season.

There are two spaces headed Wind; one, Direction, the other,

Force. The direction of the *true* wind is to be logged, not that of *apparent* wind. As a boat moves, the direction of the apparent wind is always further forward than the true wind. The direction of the latter should always be known and may be obtained by noting the surface ripples, flags on boats at anchor, manœuvres of sailing craft, and other indications. It is especially important to have this knowledge at night. By day one sees a sailing vessel a long distance away and can tell her course. At night nothing but a side-light or "flare-up" is seen and the course must be inferred from the direction of the *true* wind.

The force of the wind is measured on Beaufort's Scale, a notation giving to different velocities of wind different values on an arbitrary scale ranging from zero to twelve. Yachtsmen will seldom have to log any wind over force 9 on this scale. A wind of force 5 is a reefing breeze for fair-sized racing craft, in fact many careful skippers will turn in a reef when the wind gets above fifteen miles an hour.

Here is Beaufort's Scale. "Sail carried" refers to deep-water ships with old-time single topsails:

BEAUFORT'S SCALE

Hourly Velocity in Miles.	Scale.	State.	Sail Carried.
	0	Calm	
1	1	Light airs	Steerage way
2 to 3	2	Light breeze	Clean full,, 1 to 2 knots
4 to 7	3	Gentle breeze	Clean full, 3 to 4 knots
9 to 15	4	Moderate breeze	Clean full, 5 to 6 knots
15 to 18	5	Fresh breeze	With royals
19 to 22	6	Strong breeze	Topgallant sails over single reefs
23 to 28	7	Moderate gale	Two reefs in topsails
28 to 40	8	Fresh gale	Three reefs in topsails
40 to 48	9	Strong gale	Close-reefed topsails and courses
48 to 56	10	Whole gale	Close-reefed topsails and reefed foresail
57 to 80	11	Storm	Storm staysails
80 to 100	12	Hurricane	Bare poles

(From Qualtrough's Sailor's Handy Book)

When the big ships start to reef topsails it's time for small fry to think about a snug anchorage, and when it gets up to a whole gale "it's no place for a gentleman's son!"

The column headed "Sea" refers to the state of the sea, as smooth, rough, moderate, choppy, tide rips and so on. The entries are made with initials only as S, R, M, C, T, etc. The Weather column is also filled with symbols, of which there is quite a system. Most of these are initials, though there are some exceptions; thus *q* means squally and *h* stands for hail and not haze.

WEATHER SYMBOLS

(From Qualtrough)

b	represents	Blue sky	*q*	represents	Squally
c	"	Clouds (detached)	*r*	"	Rain
d	"	Drizzling rain	*s*	"	Snow
f	"	Foggy	*t*	"	Thunder
g	"	Gloomy	*u*	"	Ugly (threatening)
h	"	Hail	*v*	"	Visibility
i	"	Lightning			(objects at a distance very distinct)
m	"	Misty (hazy)			
p	"	Passing showers	*w*	"	Wet (dew)

"A bar under any letter augments its signification; thus *f* very foggy, *r* heavy rain, etc."

So we see that several symbols may be set down together, and they (with the entries in other columns) will give a pretty fair idea of the weather. For instance, r. h. t. l. means rain, hail, thunder and lightning; b. c. indicates blue sky and detached clouds; g. p., gloomy with passing showers. When we find u. q. in the weather column, with an easterly wind of increasing strength (say force 6 or 7) and a steadily falling barometer, we may infer that "the walking is bad."

The Clouds column is for the proportion of clouds to blue sky; one system gives 0 as a clear sky and 10 as a sky entirely covered. The practice in the navy is just the opposite, the heading being "Proportion of blue sky, in tenths," 10 indicating a clear sky and 0 one completely overcast.

The "Bar." column is for the readings of the barometer. These should be set down in inches and hundredths, 30.28, 29.43, and so on. The ordinary aneroid has only the even hundredths marked so that the odd ones must be estimated. The entries in the last six columns mentioned (from Direction of Wind to Bar.) should be made regularly, preferably on the hour but at least every two hours. They need not be made at the odd intervals of time, as when taking bearings, etc.

This brings us to the heading Remarks, under which the history of all the day's doings is recorded. Aside from the navigational notes, anything of interest should be set down, such as taking aboard gasolene, oil, stores or water, with the quantity of each and the price paid; members of the ship's company leaving or joining; any unusual happening in the harbor, and so on. These notes should be made *at the time*, and not written up a day or two later. As the space is generally restricted such entries are necessarily condensed; indeed "log book brevity" is proverbial. The log book records of important naval engagements are startlingly short.

The navigational notes must always be written down at once and exactly as they were taken. No "doctoring" is allowable. If a set of bearings does not plot properly, try again and you will probably find the error. Always enter the remarks systematically. The habit is worth cultivating, and can be easily acquired. The following examples may be suggestive.

Here's one for taking the departure: "10.23 A. M., Execution Lt. bearing NW¼N dist. ¼m., changed course to ENE½E C.M., set pat. log reading 17.4" In this case the previous entries under Course have been "Proceeding up East River." The bearing and distance of the lighthouse give the position exactly. The reading of the patent log when first put overboard must be recorded.

For a cross bearing: "11.55 P. M., Gt. Capt. Id. Lt. NNW ½W p.c., Green's Ledge Lt. NE½N p.c., Eaton's Pt. Lt. ESE p.c., Ship's head ENE p.c., Pat. log. 30.0." These bearings are plotted on the chart immediately and fix the vessel's position.

The patent log reading gives the distance run through the water and serves as a check on the speed. It also shows whether the effect of the tidal current has been correctly estimated.

For passing a light: "2.15 P. M. Stratford Shoal Lt. abeam, dist. ¼ m. est,, bearing N¼W, Pat. log. 48.7." This checks the correctness of the course laid and gives a new departure if the vessel is not in the position expected. ("Est." means estimated.)

For a change of course: "6.27 P. M. Cornfield Pt. L. V. abeam, dist. ½ m. Pat. log. 83.1, changed course to E⅛S C. M." This gives the position, a check on speed and tidal current, and a new departure for the next leg of the run.

When sighting an important landmark: "1.33 A. M. sighted Gay Head Lt. bearing ExS p.c., Vin. Sd. L. V. ExN p.c., Ship's head E½N p.c., Pat. log. 143.1."

The abbreviations used above are simple, Vin. Sd. L. V. means Vineyard Sound Light Vessel. When this data is plotted it shows whether the light is found on the expected bearing or not; if not, there has been an error in correcting the course for deviation, leeway, or current, and a new course must be worked out and set. The bearing of the lightship helps to fix the position. Estimating distance from a light (especially at night) is always exceedingly difficult, and cross bearings should be taken whenever an opportunity presents itself.

When anchoring: "7.50 A. M. Anchored off Nantucket Harbor Entrance in 4 fm. Port anchor, 15 fm. cable. Brandt Pt. Lt. NNW½W p.c., Great Pt. Lt. NE½E p.c., Ship's Head ESE p.c." Here again cross bearings fix the position and show if the boat drags her anchor, though for this latter purpose cross ranges are far better. Cross ranges will also be useful in trying to locate an anchor that has been lost. They may be set down somewhat as follows: "Brown church spire in range with brick factory chimney, ENE. Outer spindle just open to N'd of town dock."

When sounding for locating your position: "8.17 P. M. Pat. log. 47.4, 12 fm. sand, 8.27 P. M., Pat. log. 48.8, 10 fm. white sand black specks, 8.40 P. M. Pat. log. 50.1, 8 fm. mud.

LOG OF "ELMO II" 1909 RACE NEW YORK TO MARBLEHEAD

TIME	MAGNETIC COURSE	COMPASS COURSE	CURRENT	WIND	SEA	CLOUDS 0 TO 10	BAR	R.P.M.	MILES MADE GOOD	POSITION & REMARKS.
SATURDAY JULY 17, 1909										
Start 10.38 AM										
11.0. AM		SE ½ E								Norton Pt Abeam
11.45	SxE	SxE		L SW	easy roll	7	29.88			Red nun #2 abeam
1.35 P.M.	SxE	SxE		"	"	8	29.87			Whistle #2 "
3 P.M.	E	E		"	"	8				Changed course to E
3.50 "	ENE ¾E	ENE ¾E		SSW	rougher	6 hazy				" " to ENE ¾E, Fire Isd Lt abeam
5.40 "	"	"		"	"	6 clearing	29.82			
7. "	"	"		dying light	Moderate	"				"Kittiwa" alongside
8.25 "	ExN	ExN		getting N fresh	"	"	29.85			Shinnecock Lt. abeam. Wind shifting to N.
JULY 18 12.30 AM	ExN		↘	N light	"	Clear	29.85			Montauk abeam. 1 Mile
12.45	ExN	NExE ¼E	↘ 2½K	"	"	"	"			" on port quarter. Changed course for Tate
2.30	"	ENE	↘ 1½K	"	"	"	"			Block Isd Lt. abeam. ½ Mile, altered course.
6.40	E ¾N	E		"	long roll	"	"			Vineyard Sd Lt abeam
7.05	"	"	1K	"	"	"	"			Cuttyhunk abeam
7.30	"	"		—	"	"	"			Gay Head "
7.45	"				easy roll	—	"			Quick's Hole "
8. AM	E ¾N	E	← 1K	light	smooth	0	"			Tarpaulin Cove "

LOG KEPT ON A MOTORBOAT IN AN OCEAN RACE

Keeping such a record as the above may prove too laborious for the average man, but will be very helpful to the navigator if properly filled out and will add to the pleasure of the winter's "fireside cruises."

But the entries made in any log must be written down as soon as possible after the events they describe have occurred. If a light is passed, make a note of it *at once;* the same with a bearing. Half an hour later the recollection will not be absolutely clear and a bearing may be improperly written or the time set down wrongly. So form the habit of recording things as they happen. Above all, *no faking!* Better a blank page or the bare note of leaving one port and arriving at another than a circumstantial account worked up a day or two late. Sometimes there is very little to write in the Remarks column, especially after a quiet watch at anchor, but as our captain told us in '98: "You can always generalize about the weather."

Those who desire more than the first form given and yet do not wish to undertake such an extensive record as the second one may well study the example given above, which is a copy of the actual log kept on a 34-foot motor boat in an important race. It is written in a ten-cent composition book and quite faithfully filled out, especially so when the conditions are considered. The final entry, "Won easy," reflects a little of the feeling of jubilation that comes at the finish of a long, hard-fought contest when your craft has crossed the line in the lead and all hands wear the most cheerful of grins.

Regular printed log books may be bought from dealers in nautical supplies but they are generally designed for sea-going craft or large yachts and have some spaces that will never be filled on the average small packet. They are also apt to be rather bulky to stow away on a boat where every inch is precious. With the home-made book the navigator may have as many or as few columns as suits his fancy, the book can be small to tuck away in the binocular rack or similar receptacle, or even in the pocket.

The binnacle seems to offer an inviting stowage place—but *don't!* Never stow anything in the binnacle or near the compass; some day a bit of steel or iron may get there and cause no end of trouble.

On sailing craft, whenever sail is set, reefed or furled it should be noted, also every time she tacks, except, of course, when working along the beach with a series of short boards.

Inaccuracy in the time gives one a wrong estimate of the speed. How often one sees the skipper work out of the harbor, and, when well outside, look at his watch and guess at the time elapsed since leaving. When entering the next port no one thinks of noting the time of passing some charted mark but, after everything is snugged down, some one pulls out his watch and guesses at the time of anchoring. Then with this time from port to port and the distance run (often overestimated) an hourly speed is figured out that may be half a knot or more above actual speed.

An important race comes along and the owner borrows a navigator whose first question is, "What can she make?" If he figures on the speed given him he will do some thinking while waiting for lights to be sighted or making the landfall after a run with the tidal current at an angle with the course. Carelessness about time and distance is responsible for most of the "talk speeds" of yachts, and of many commercial boats, too. A certain famous commodore of the New York Yacht Club used to say that his flagship could make eleven knots—and lick any sixteen knot packet in the fleet!

Comment on the Proposal to Rate Boats by Speed Alone

NEW YORK, N. Y., May 5, 1912.

Editor of YACHTING:

I have read with interest the letter from the president of the A. P. B. A. in your May issue recommending the adoption of speed alone as a basis for classifying hydroplanes. While this is rather a new proposition in power boat racing, it seems to me to embody correct principles; and, from an amateur racing man's standpoint, I should like to see it tried.

In the first place it does away with a complicated rating formula, which the average amateur does not understand, and is not only distrustful of but which, according to his observations, does not always work out equitably. Another point is that with hydroplanes that rest on a small percentage of their bottom when running it does not seem logical that length should be a factor in their classification. A lot of 20-foot boats last year beat 32 and 40-footers, and if we are to believe what the papers have just reported about the performance of a 26-footer in Atlantic City that made a mile in 1 min. and 8 secs., it would seem to knock the rating system in the head, for such boats as Dixie IV would, under the old rating rule, have to allow time to a boat that could actually beat her. On the other hand, if hydroplanes are classified by length alone it does not seem logical that a 26-foot boat with a speed, say, of 45 to 50 miles an hour should be debarred from racing against a boat of equal speed merely because the other boat happens to be in the 32 or 40-foot class.

The details of handicapping the boats in their respective speed classes should not be difficult. It also seems that such classification would tend to encourage new departures in hull design, and instead of trying to beat a rating rule designers, consequently, would try to get faster boats. If a 50-mile boat developed in the 45-mile class everybody would be out "gunning" for a boat to beat this, irrespective of size. It certainly puts a premium on securing the fastest boat, regardless of type.

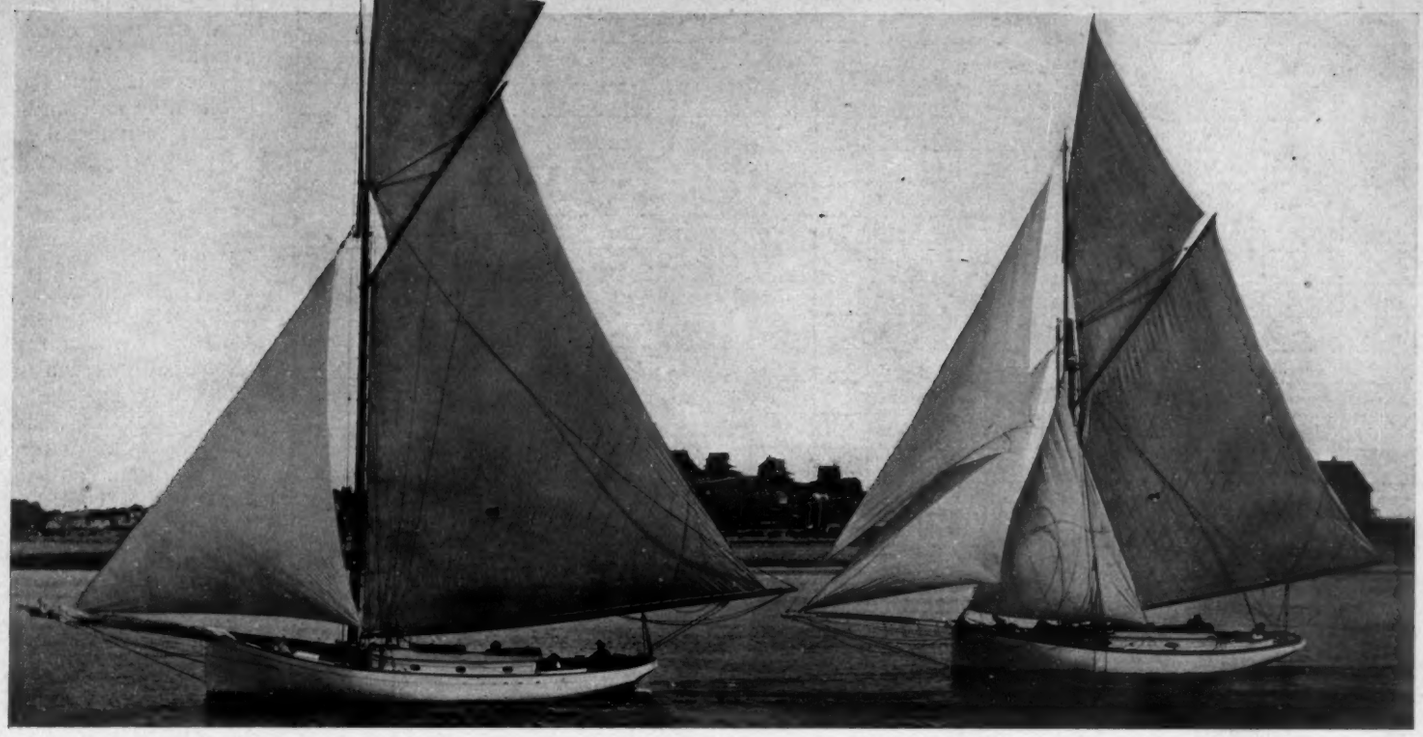
The principal drawback, as far as I can see, would be the difficulty of filling all the classes in a club or association race, but this can be obviated by combining any two classes. Instead of having a 30 and 35-mile class, have a 25 and 35-mile class, instead, with the handicap based on comparative speeds as per past performances, starting the boats on their handicaps. I would like to see this system tried out for at least a season.

CARROLL KENDRICK.

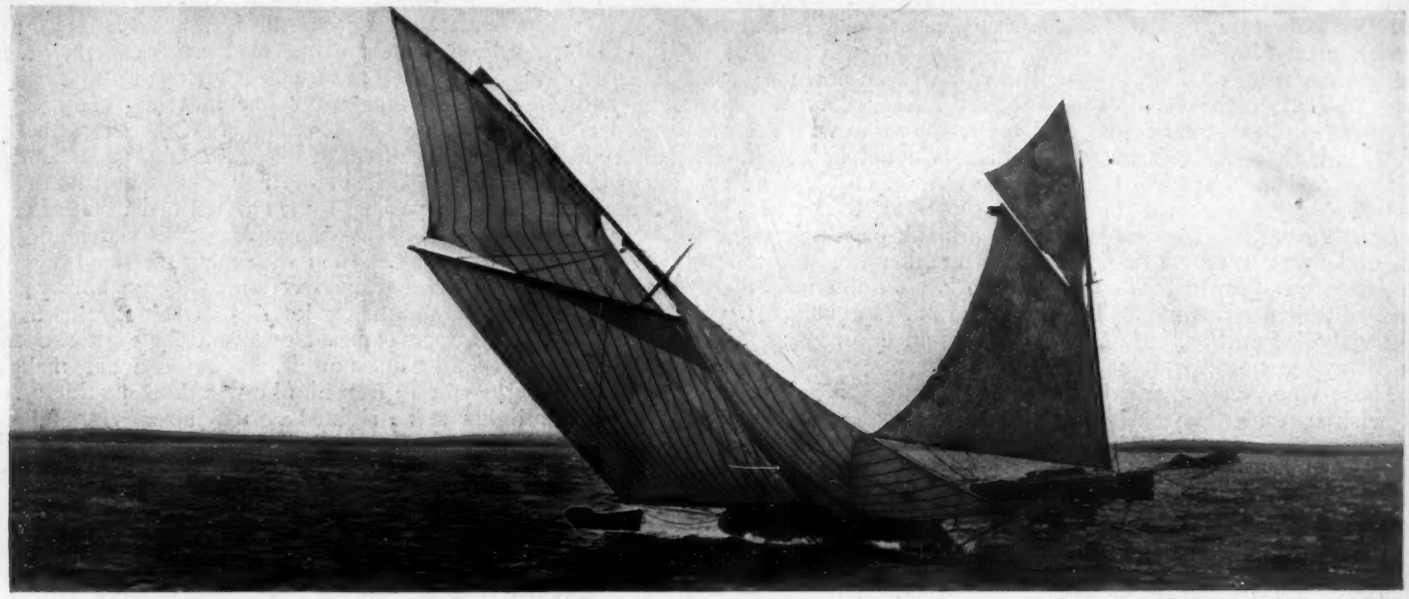
The Last Fifty Years in Yachting

The Period from 1884 to 1886

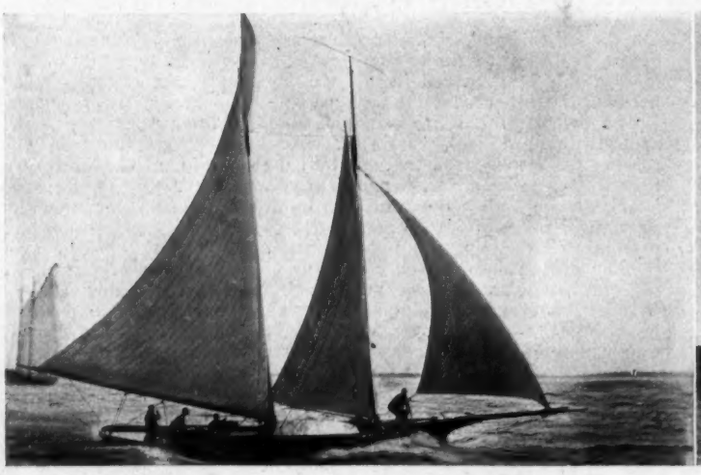
PHOTOGRAPHS BY N. L. STEBBINS AND OTHERS



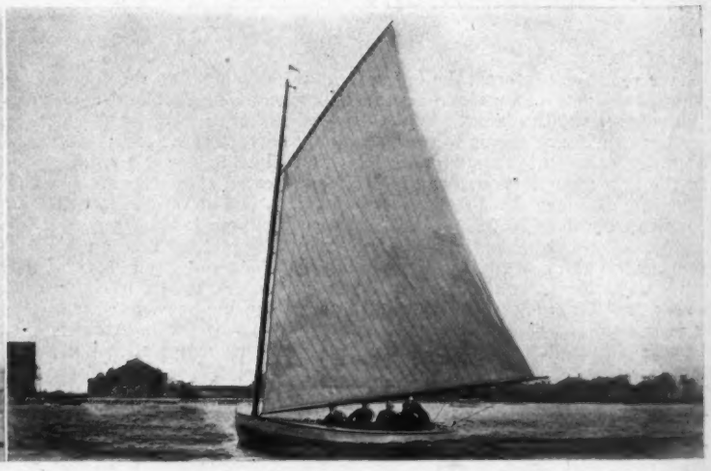
LILLIE AND ELLA MAY RACING IN 1884. JACKYARD AND CLUB TOPSAILS WERE COMMON ON BOATS OF THIS SIZE.



SARACEN, ONE OF THE FIRST OF THE SMALL, NARROW CUTTERS THAT SAILED ON HER SIDE AND CARRIED ALL THE RIGGING OF A 65-FOOTER.

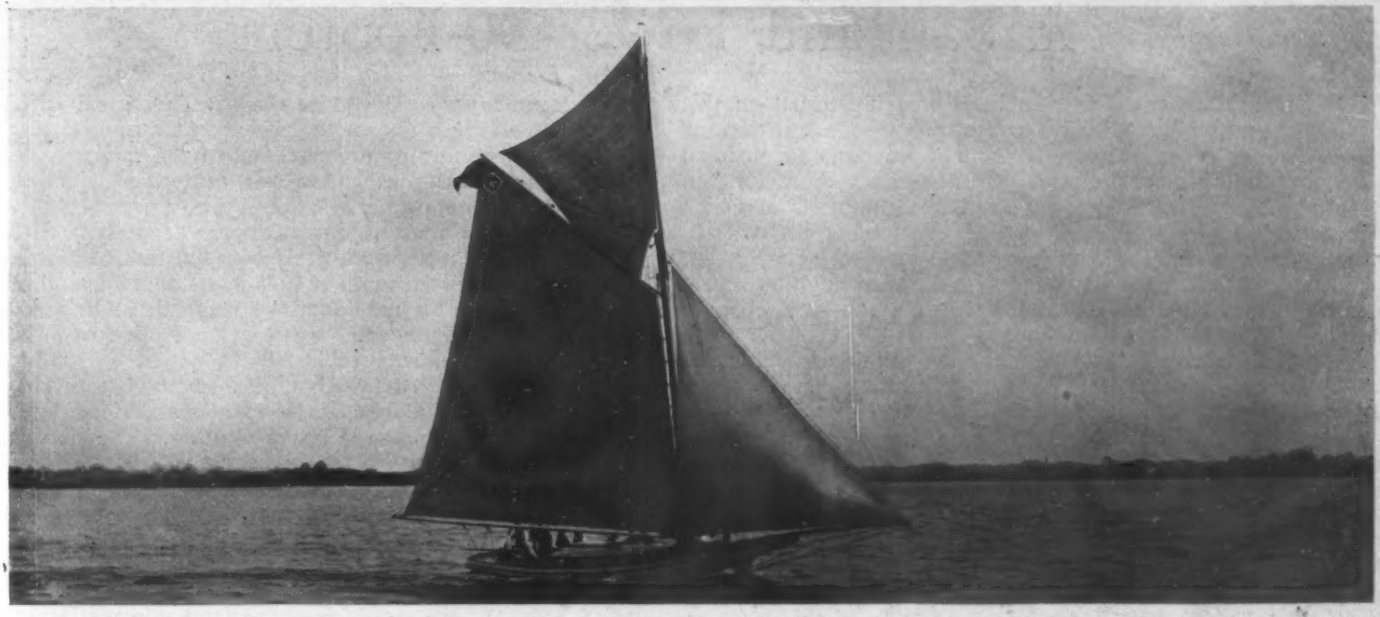


BESSIE, A TYPE OF SMALL SCHOONER OF 1884.

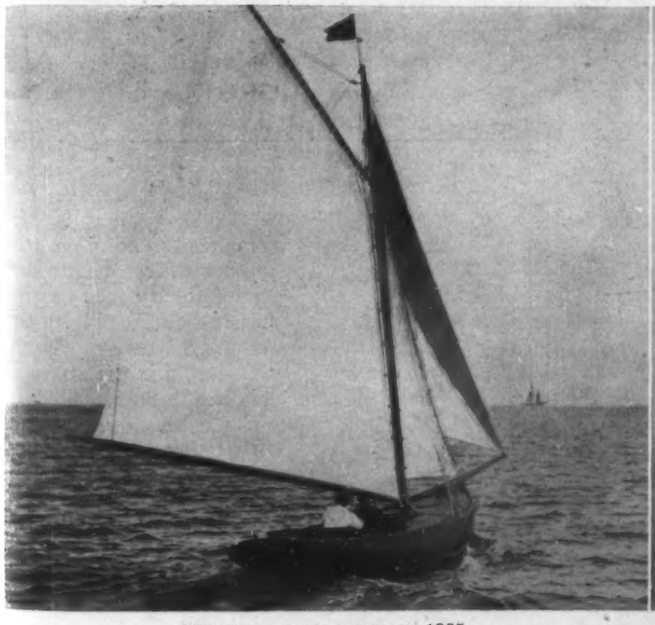


FLORA LEE, A FAMOUS RACING CAT OF 1885.

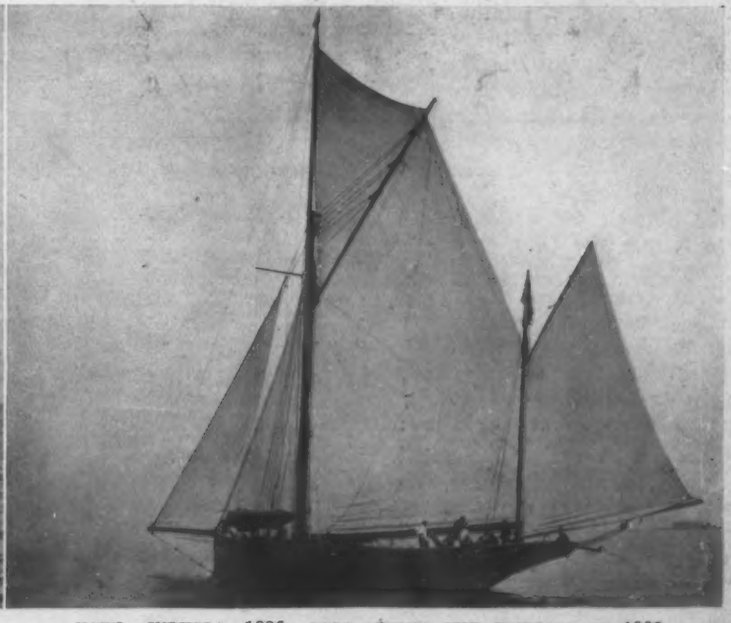
HURLEY, A FAMOUS BOSTON "SANDBAGGER" OF 1886



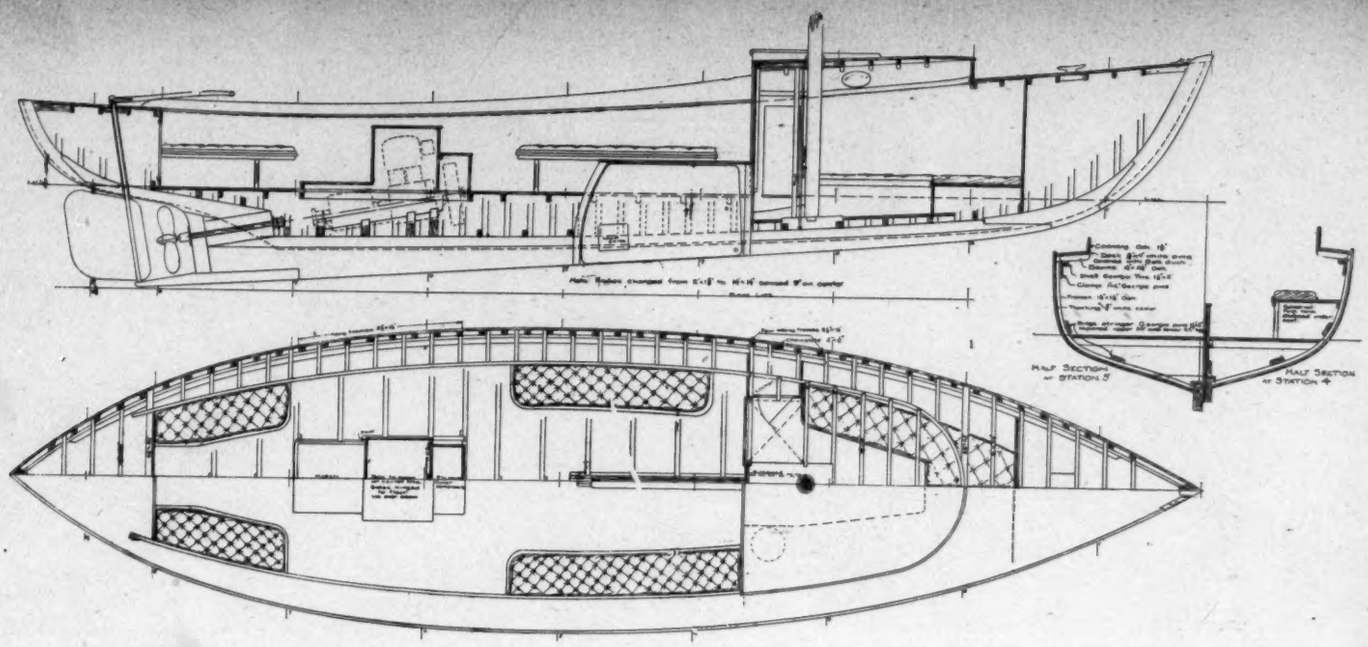
CONSORT, A TYPE OF SLOOP YACHT SAILED ON THE DELAWARE RIVER IN 1886.



THELGA, A KEEL SLOOP OF 1885



YAWL, CYTHERA, 1886. LOST DURING THE BLIZZARD OF 1888.



A Sail and Power 30-Footer

WE refrain from calling the little boat illustrated on this page an auxiliary for the reason that that term has come through common usage to imply a preponderance of sail over motor in the power scheme. Neither does she belong in the class with those out-and-out power boats, the masts of which are occasionally draped with a practically useless bit of sailcloth, supposedly for use in case of accident to the engine, but as a matter of fact scarcely ever capable of giving any more service in an emergency than would the rig of a 100-foot schooner if bent upon the spars of the Olympic.

Although we have plenty of cut-down auxiliaries about, a real sail boat with a moderate rig and powerful engine is something rather new and for this reason we believe that the drawings from Mr. Crowninshield's board here shown will be of more than passing interest to all yachtsmen interested in small boats that are capable of going to sea and taking care of themselves.

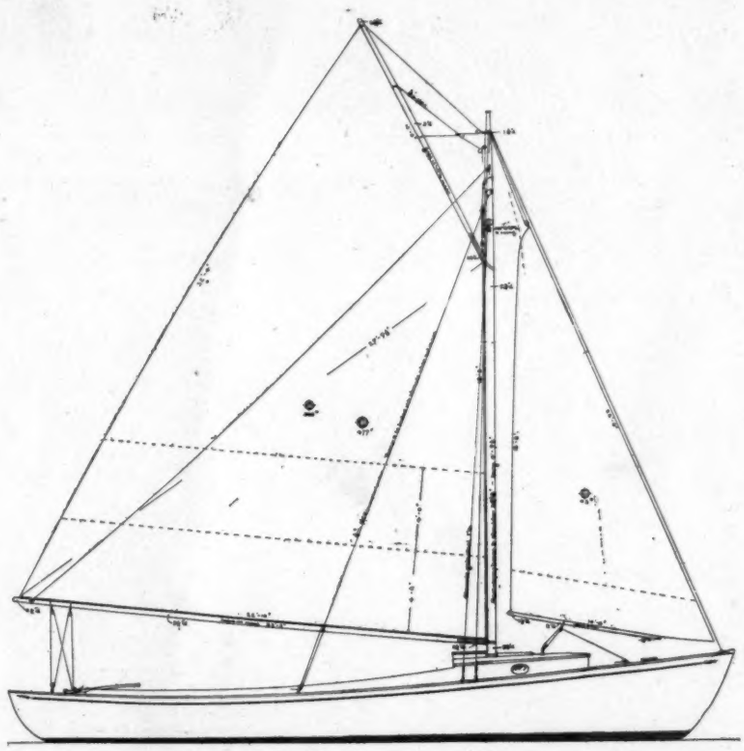
It will be noticed that the lines of this 30-foot waterline boat show approximately the same type of hull as many of the small power fishing craft used in Massachusetts Bay, and along the Maine coast. The generous sheer and pointed stern are suggestive of a whaleboat.

As the owner, Mr. Sumner N. Myrick, of Boston, expects to use the boat chiefly for day sailing and fishing she has been given a large open cockpit and relatively slight cabin accommodations. For this reason she would hardly be suitable for deep water cruising, but for the work for which she is intended it seems certain that she will prove an able and satisfactory little packet.

She has a two-cylinder gasolene motor of ample power to give her good speed under engine alone. This is located in the center of cockpit under a box hatch. The seating arrangement of the cockpit gives ample room around the engine. There is a centerboard just aft of the cabin, and though primarily a power boat she is wide enough and has enough ballast to carry her rig properly.

The sail plan is approximately equal to that of a straight sail boat of the same size with double reefs tied in, and, although the little vessel will, no doubt, be sluggish in a light air, the center of effort of the sails is not far enough forward to make her in any way unmanageable.

It goes without saying that in a strong breeze she will be right at home. The short main boom and absence of bowsprit will be a great advantage in heavy weather. The jib works on a traveler set on top of the low trunk cabin, and is handled by a single sheet led aft to the cockpit.



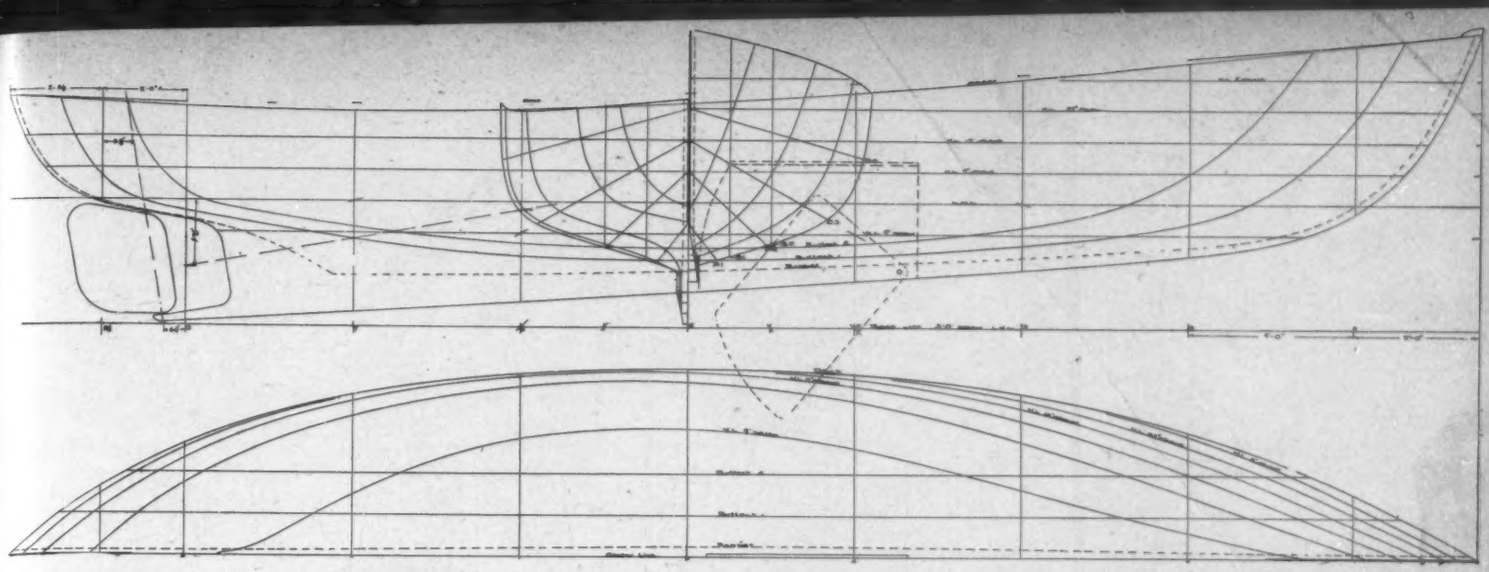
The boat is now under construction at Loring's Yard, East Braintree, Mass.

Her principal dimensions are as follows:

Length over all, 35 feet 6 inches; length water line, 30 feet; beam, 9 feet 2 inches; draft, 3 feet; total sail area, 479 square feet; freeboard, forward, 4 feet 3 inches; freeboard, aft, 2 feet 6 inches.

The generous freeboard makes it possible to get almost 5 feet headroom in the cabin with only the low cabin trunk indicated in the plans.

A feature of the construction is the strength which it has been necessary to give the cabin top, for the reason that the cabin is placed so far forward (in order to gain room in the cockpit) that the mast must come up through it. In order to carry the mast



partners, the cabin top has been built on the same specifications as the deck.

Frames are of oak 1¼ by 1¼ inches, spaced 8 inches on the center, thus providing a light but extremely strong construction. The planking is white cedar ⅞ inch, finished. Ballast can be carried inside, but there is a weighted center board.

A Shallow Draft Yacht Tender

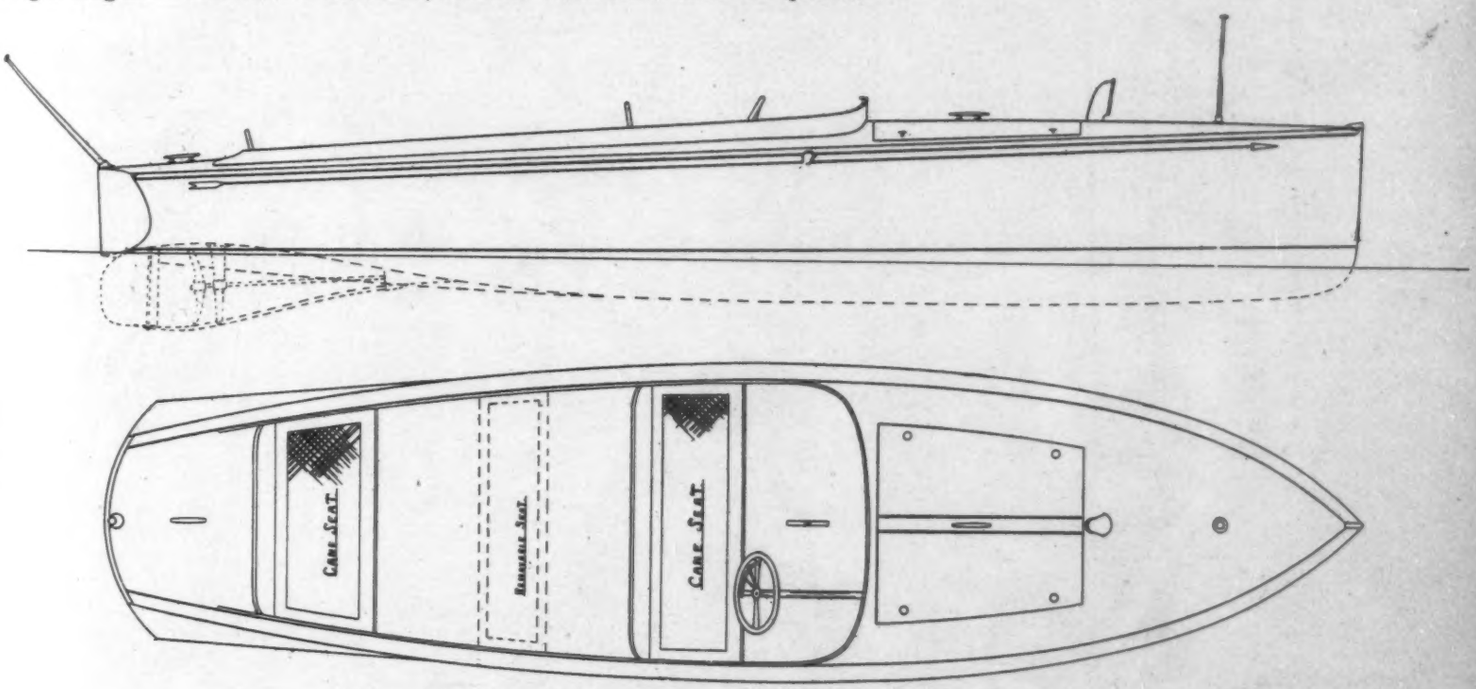
THE plans given below show an eighteen-foot tunnel-stern yacht tender designed for Mr. E. L. Andrews, of Daytona Beach, Florida, by the Weckler Boat Company, of Chicago. The boat is 4 feet 8 inches wide and with four people aboard draws but 12 inches of water under the shoe which protects the wheel and supports the rudder.

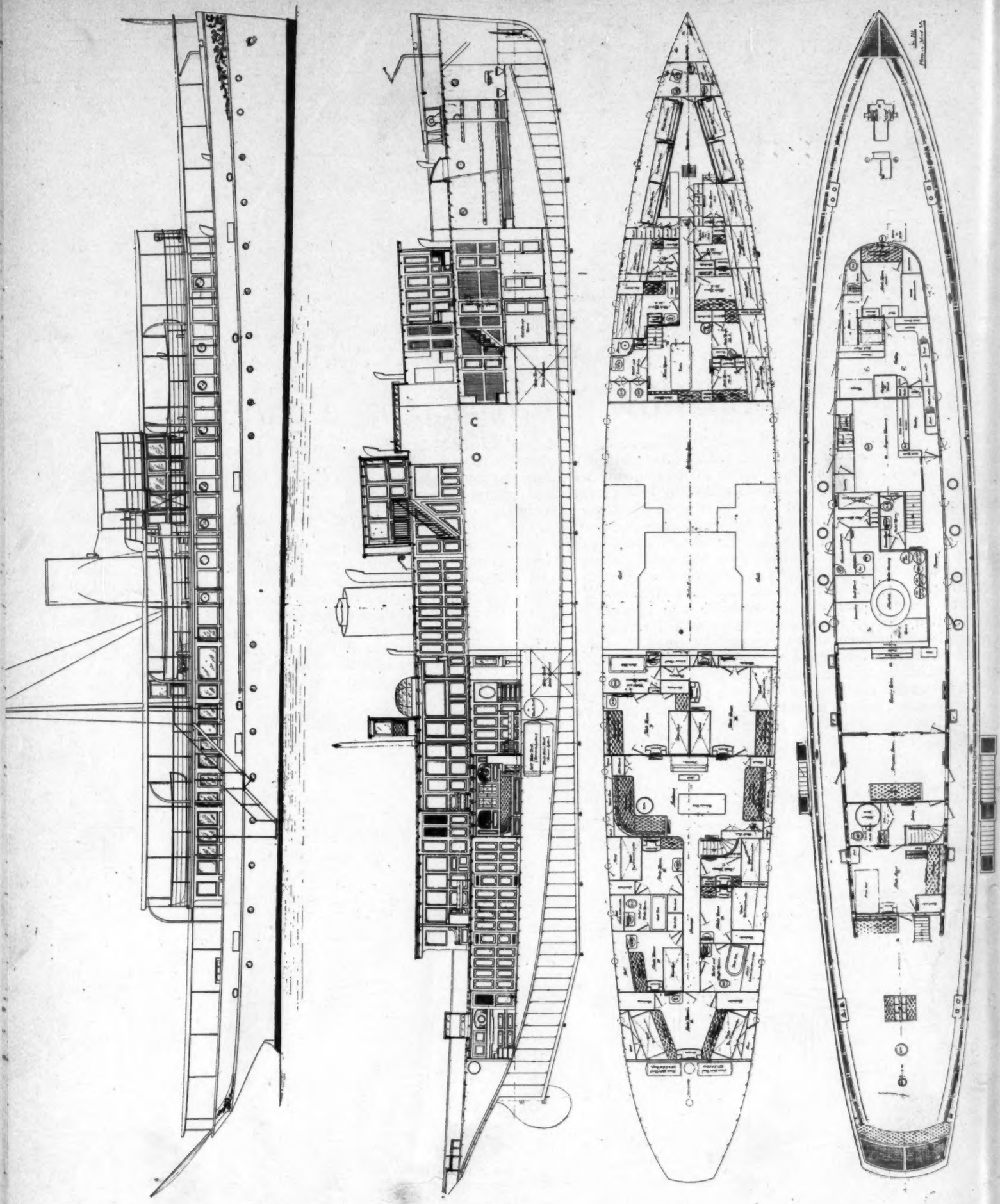
The construction is very light so that hoisting to the upper deck of Mr. Andrews' 85-foot power houseboat Lillian III may be accomplished with ease. The planking is of one-quarter inch Northern white cedar, copper riveted to elm frames. The seams of the planking are covered with hospital bandage tape and elm batten blocks, which are fitted between frames. This novel method of securing a water-tight hull has been carefully worked out by the Weckler Boat Company and found to give excellent results with extreme lightness.

The frames are ½ x ⅝-inch rock elm in single lengths from sheer to sheer, and all longitudinal members are of yellow pine in single lengths. The deck is of cedar, covered with union silk. Covering boards are of selected Honduras mahogany. The seats are caned for lightness, the seat frames being of selected Honduras mahogany to conform to the finish of the bulkhead, coaming and transom.

The motor, a two-cylinder 12-H. P. Waterman with copper water jackets, is installed forward of the bulkhead in a separate compartment reached by two large hatches in the forward deck. Full automobile control is provided with motor controls centered in the steering wheel. A rear starter, switch and oil sight feed are mounted on the bulkhead. The reverse gear lever is at the side of the steering gear. Seats are provided for six persons, the middle seat being removable.

Its lightness and shallow draft make this a desirable boat for use as a tender to yachts or houseboats cruising on rivers or in water where many interesting spots cannot be reached by the ordinary power tender. The appearance of the boat and the construction, which is light but strong, are typical of the Weckler product.





CRISTINA, A NEW 177-FOOT CRUISER DESIGNED BY GIELOW & ORR.

Cristina, a Handsome Cruiser

THE largest American yacht to be built this year is the Cristina, recently launched at the yard of the Pusey & Jones Co., Wilmington, Delaware, for Mr. Frederick C. Fletcher, of Boston, a well-known yachtsman. This new craft is a steam yacht, the plans being prepared by Messrs. Gielow & Orr, of New York, who also superintended her construction.

The type of the new vessel is that of a powerful cruiser. She has a waterline length of 155 feet 10 inches, is 177 feet 6 inches in length overall, with a beam of 26 feet 3 inches, and 14 feet 9 inches depth of hold. The hull is of mild steel from 60,000 to 68,000 pounds tensile strength, practically equal to marine boiler plating, while parts of the engines are of nickel steel. The plating above the waterline is flush, below it is in and out, thus presenting a smooth surface above and the strongest possible construction below the waterline. No attempt has been made to economize in weight, for in preparing the design of this craft the object in view has been to produce a thoroughly substantial vessel, capable of going to sea at any time.

The lines of the yacht, while showing power, are very easy, extending in fair curves from stem to stern. She is an unusually interesting type in that she is a radical departure from the typical or conventional steam yacht. She has a plumb stem, graceful sheer, and the whole appearance of the hull is clean cut and pleasing. The deck is flush and runs the full length of the vessel in an unbroken sweep. The bulwarks are of steel, finished with a teak rail.

The deckhouse is of steel, 102 feet in length with 7 feet 4 inches headroom, while a shade deck extends to the side of the hull for the full length of the house. At the after end of the house there is a shelter hood with glass side panels, divan, etc., and a stairway leading to the upper deck.

In planning the accommodations the owner's and guests' quarters were grouped in the after part of the vessel, and the crew's accommodations forward, an arrangement that cannot be excelled for convenience and personal comfort.

The captain's room is in the forward end of the deckhouse, fitted with a large berth, wardrobe, divan and a separate toilet and lavatory. Aft of this is a completely appointed galley, 12 feet in length, with a mean width of 14 feet. On the starboard side, aft of the galley, is the butler's pantry, fitted with the necessary dressers, dish racks, lockers, sink and steam table. Extending aft from the butler's pantry, along the starboard side, is a passageway leading to the dining room, and on the inboard side between the engine and boiler housings there is a stairway leading to the smoking room on the upper deck.

The dining saloon is on the main deck, immediately aft of the machinery space, and is 13 feet in length by 16 feet in width, with a sideboard in the forward end. In addition to the windows, there will be fitted a domed skylight 6 feet square, furnished by Tiffany & Co. Aft of this is a reception room, which connects with the dining room by means of folding doors, so that the two apartments can be thrown into one.

On the starboard side, abaft of the reception room, is a lobby with a stairway leading to the owner's quarters below. Opposite is a large bathroom fitted with lavatory, shower bath, etc. The extreme after end of the deckhouse is fitted with a large stateroom with brass bed, wardrobe, divan, desk, etc.

On the upper deck is a smoking room 12 feet 6 inches in length and 10 feet wide in the clear, finished in Circassian walnut, with chart table at the forward end, and divan at the after end. The vessel will be steered from the bridge on top of this smoking room. Aft of the domed skylight will be a windshield with a cozy corner, divan, etc., on the after side.

The balance of the living quarters for the owner and his guests will be aft of the machinery space, occupying the full width of the vessel, in a fore and aft distance of 60 feet, and consisting of a main saloon 12 feet by 24 feet, seven staterooms, and three bathrooms. The owner's stateroom will be 12 feet by 15 feet, fitted with brass bed, large wardrobe, lavatory, two bureaus, divan, etc. The other staterooms, although somewhat smaller, will be finished in a similar manner. The plumbing throughout is of the very best and is of the open type.

Aft of the collision bulkhead is a forecastle 20 feet in length, fitted with folding berths, transoms, toilet room, lockers and with a wardrobe for each man. The officer's quarters and messroom occupy a space of 26 feet fore and aft, extending full width of the vessel.

The yacht will be lighted by electricity, the generating sets being operated by steam turbines, and in addition to this there will be an Edison storage battery of double the capacity that is usually placed in a yacht of this size. Steam heat is provided throughout the craft, and a steam table is fitted in both the galley and pantry. The vessel's equipment also includes an ice-making machine, refrigerating plant, which, together with the large fresh water tanks, coal carrying capacity, etc., will enable the craft to go offshore for a considerable period of time.

She is propelled by a pair of triple expansion engines, capable of giving a speed of not less than 15½ knots per hour. The boilers are of the water tube type, and will supply steam under natural draft for ordinary cruising. The fire room will be made air tight and fitted so that when closed forced draft can be supplied by means of a fan blower operated by a steam turbine.

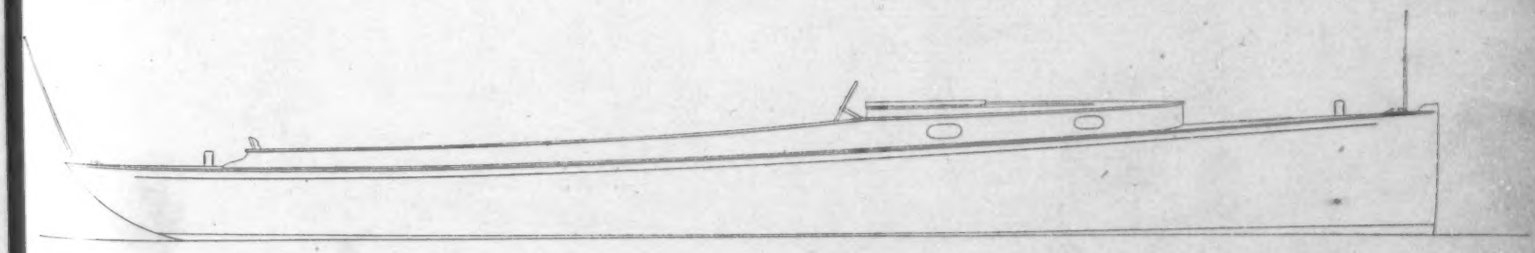
CRISTINA, A NEW 177-FOOT CRUISER DESIGNED BY GIELOW & ORR.

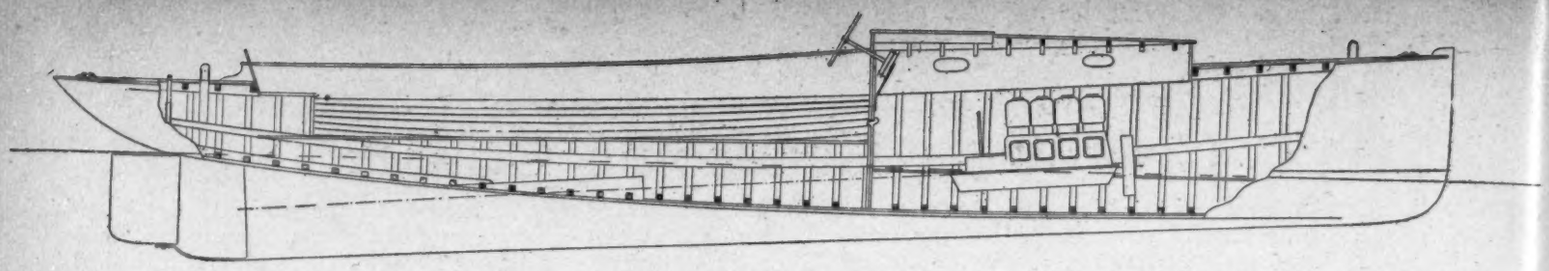
A Runabout for Maine Waters

THE plans here shown are those of a 35-foot launch, designed and built by the Stearns and McKay Company, Marblehead, Mass., for Mr. C. C. Goodrich, of New York, whose summer home is at York Harbor, Maine. The launch will be used on the York River as well as for outside service and has been given great strength of construction with exceptional seaworthy qualities.

An unusually large amount of space under the engine house forward is devoted to the machinery, so that there will be no chance for cramping or crowding. This leaves the large cockpit free to be used entirely for chairs for the passengers. She is planked and finished in mahogany and all the joiner work is of handsomely figured wood.

This launch is one of a number of the same type which have





proved very satisfactory for general service in all kinds of weather.

The power consists of a four-cylinder 30-H. P. engine, equipped with a specially designed self-starting device.

The principal dimensions are:

Length overall, 35 feet; breadth, extreme, 7 feet 6 inches; draft, extreme, 2 feet 9 inches.

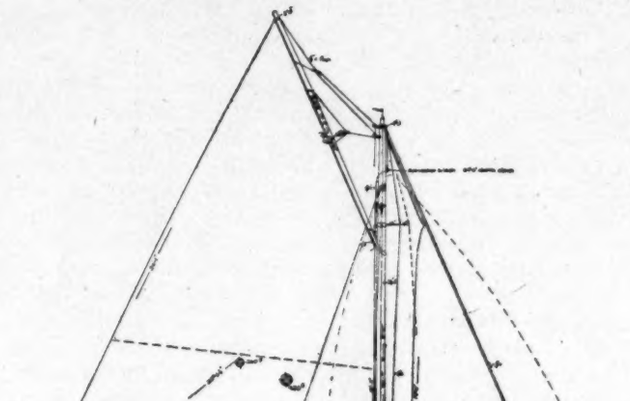
A steering wheel of the automobile type is located on the bulkhead abaft the engine, and complete control of the motor is had from that position.

A Marblehead 18-footer

THE 18-footer, drawings of which appear on this and the following page, is being built for Mr. E. W. Murphy, of Marblehead, Mass., from designs by Samuel H. Brown, Jr., also of Marblehead. Mr. Murphy has been racing in this class for the last two years and was formerly owner of the Arrow I.

Although the little boat is laid down essentially upon racing lines, there has been no skimping in her construction, nor has strength been sacrificed to speed. The frames are of ⅞-inch oak, spaced 9 inches, center to center; and the planking is white cedar ¾-inch thick, finished. The construction plans show a generous use of knees and diagonal bracing, in addition to the regulation clamps and stringers.

An excellent feature of the construction is the fact that a deck beam ties the boat together at the after end of the cabin house. This not only gives additional strength but makes the cockpit into a well which could be filled up to the top without any danger of water leaking into the cabin through poorly fitting slides or cabin doors.



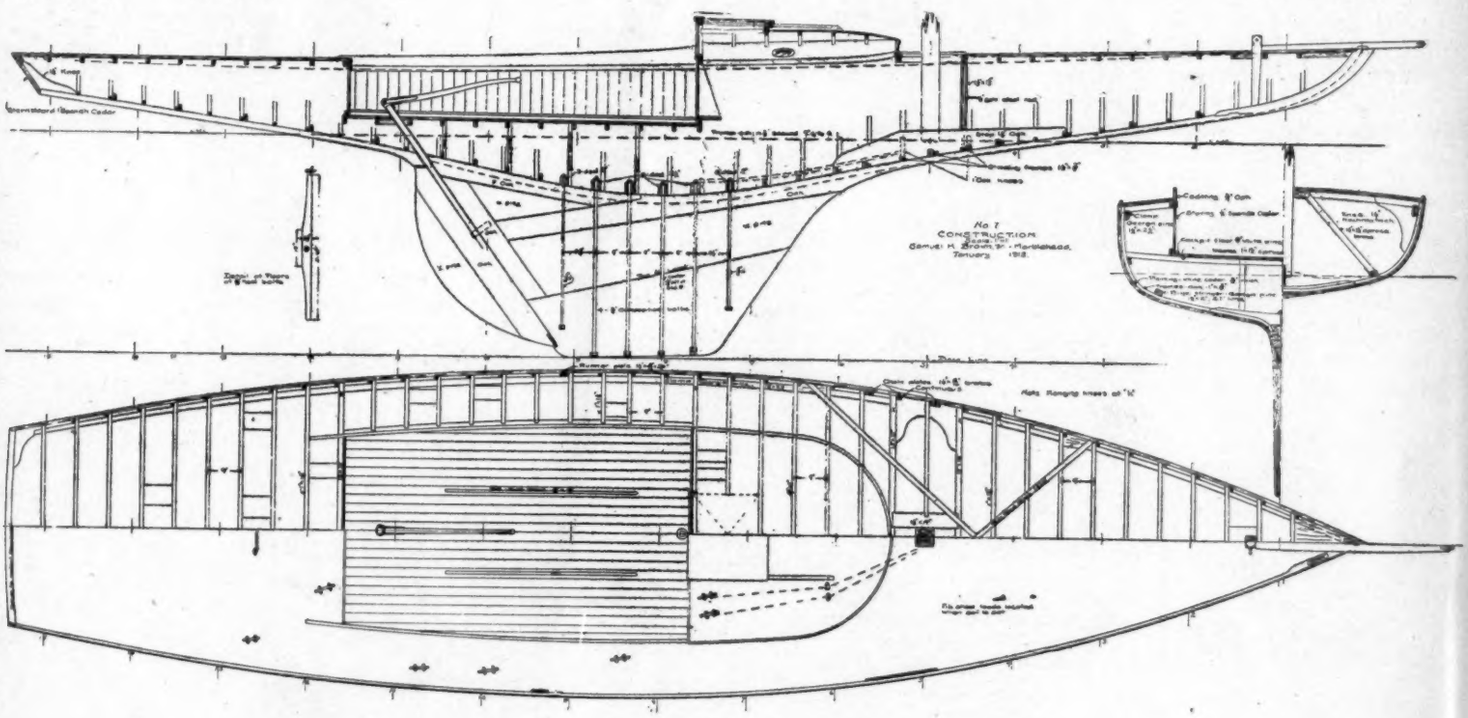
The little boat should prove equal to the strain of a severe racing season and should also make a good afternoon sailer.

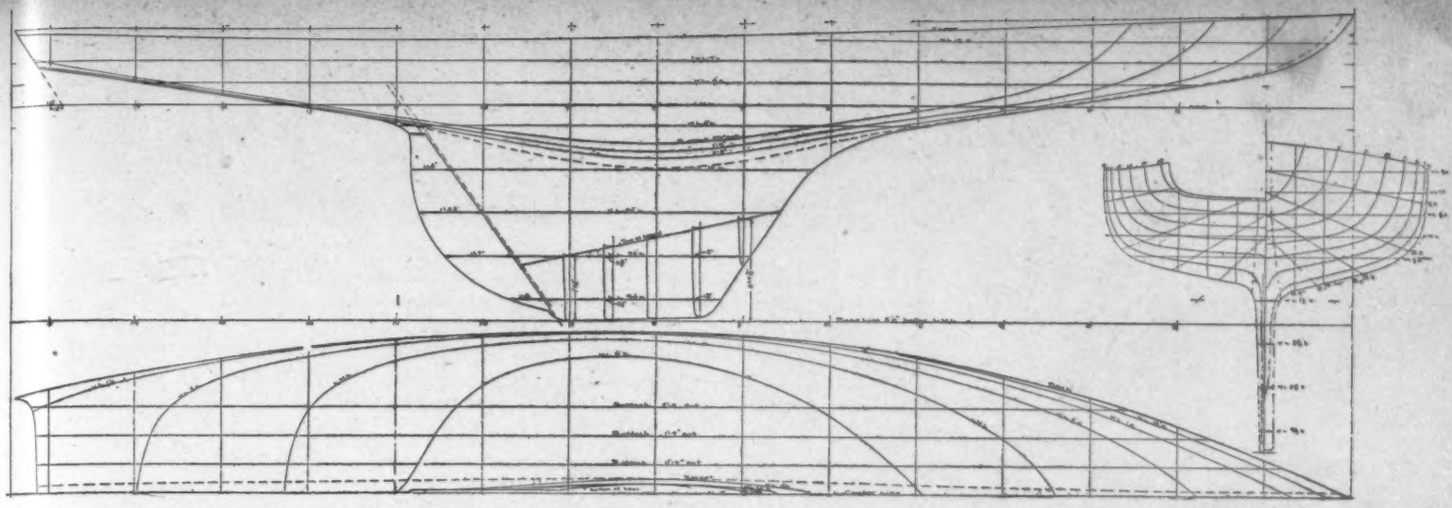
The principal dimensions follow:

Length, overall	30′	11¼″
Length, waterline	17′	9″
Beam	7′	6″
Draft	5′	

The sail area is 450 square feet, the plan being that of a high narrow rig with practically no sail outboard which has become typical of this style of craft.

The boat has a small cabin forward which can be fitted with transoms to sleep two comfortably, or





can be used for storage purposes for light sails, slickers, sail covers, etc., a great convenience in racing when one wants to get a balloon jib or spinnaker off the deck and into a dry place as quickly as possible.

An Interesting Fast Cruiser

ONE of the new power boats likely to attract attention during the coming season is the seventy-footer designed by Bowes and Mower, of Philadelphia, Pa., for Mr. Charles R. Myers, of Atlantic City. This boat is a high-speed cruiser designed chiefly for day service, and for fishing trips along the Jersey coast.

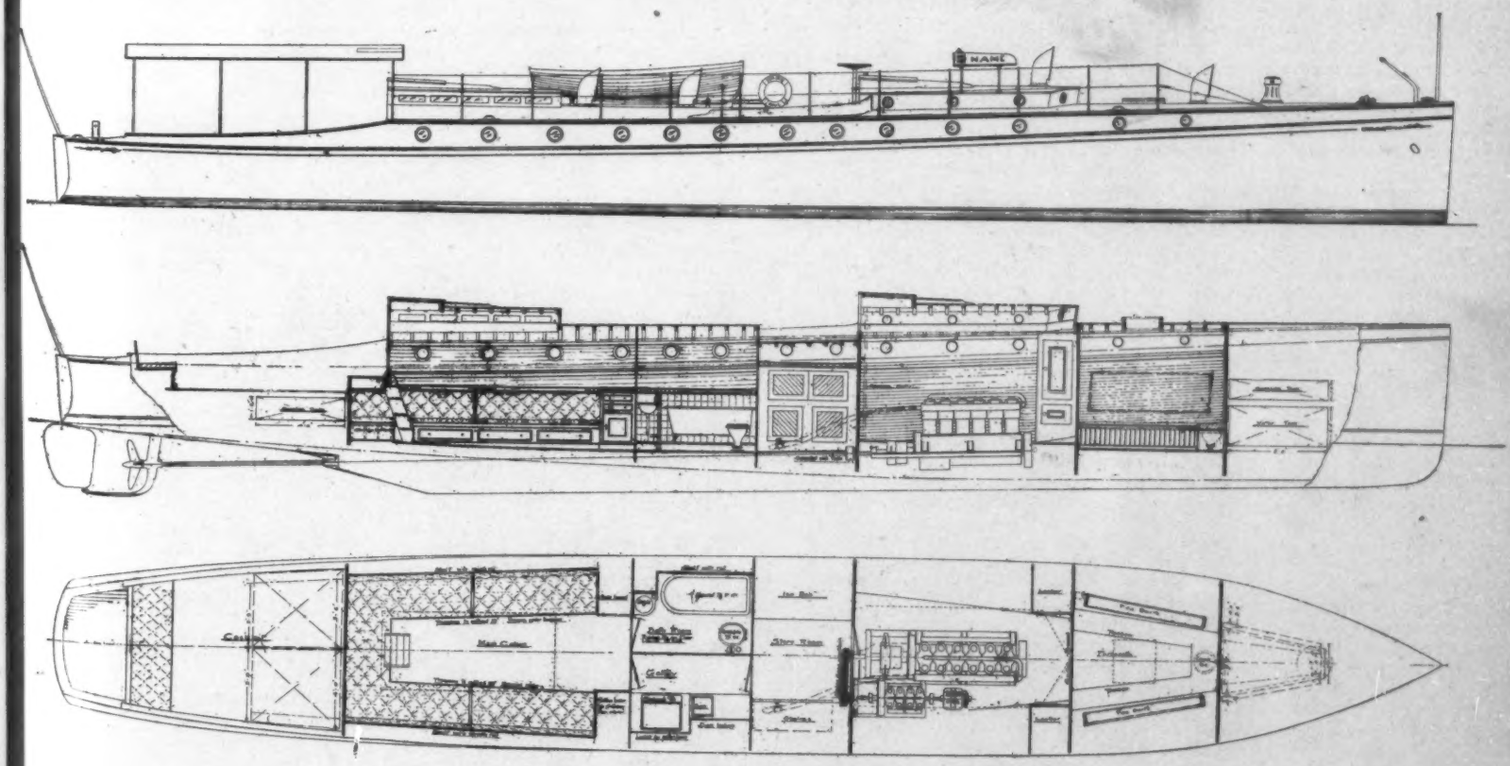
She will be equipped with a six-cylinder gasolene motor, 7½ inches by 7½ inches, developing about 160 H. P. This will give her an estimated speed of twenty miles per hour.

In addition to her main engine, she will have a small four-cylinder motor, developing 30 H. P., direct connected to her electric generator, and also connected to the main shaft with a chain drive, so that in case of a break down to the main engine she can be driven by her small auxiliary. This arrangement is an entirely new idea, the result of which will be watched with interest.

The boat will have a large cockpit aft from which a companionway leads to the main cabin. The latter is 14 feet 6 inches long, and has a clean floor space of 4 feet between transoms at the forward end. Forward of the cabin on the port side is a bathroom 6 feet long, and half the width of the boat. On the starboard side is the galley with stove, sink, dish lockers, etc.

The hull is of fairly light construction, but of ample strength for a boat of this type. The planking is cedar 1⅛ inches thick, with steam bent oak frames, 1½ by 1½ inches spaced 10 inches, center to center. All stringers, clamps, and longitudinal members are of selected, long leaf, yellow pine.

The principal dimensions are: Length overall, 70 feet 9 inches; length waterline, 70 feet; breadth, extreme, 10 feet; draft extreme, 3 feet 6 inches; freeboard, bow, 6 feet 4 inches; freeboard, stern, 3 feet 6 inches. The profile shows an extremely trim looking craft.



Mess Room Talk

IN this Department we will answer questions concerning the problems which boat owners are constantly running up against in the operation of their motors or the handling of their boats. Theoretical as well as practical questions will be answered promptly by mail, and when of sufficient interest, will be printed for the benefit of YACHTING readers. This service is free. Don't hesitate to make use of it. Address, Information Department, YACHTING, 141 W. 36th St., New York City.

Propeller for an 18-Foot Auxiliary Catboat

Weehawken Heights, N. J.

I have a 14-inch diameter, 2-bladed wheel on my 17 foot x 8 foot beam x 2-foot draft Cape catboat. This is the boat you advised me how much sail and ballast to carry. What I would like to know is. would a 16-inch diameter wheel give me more speed against the tide? The wheel I am now using does not send the boat along very fast when bucking a tide. The engine is a 3-H. P. Lathrop and is supposed to turn up a 14-inch or 16-inch wheel 500 R. P. M. How much pitch should the wheel have? W. M. T.

The question of a propeller cannot be settled by any hard-and-fast rule. You can, of course, tell within limits just what propeller to use, but this is best determined by observation. If the engine used with the present propeller turns up a higher number of revolutions than its supposed rate, as you say 500, it could carry a slightly larger wheel than the 14-inch; if not, a larger wheel would simply deaden the engine.

Recovering a Canvas Deck

Westmount, Que.

I would like to have you advise me the best method of recovering deck of a sailing boat with canvas. My boat is 27 feet overall and canvas is beginning to wear. Rather than put a new canvas on and take chances on its fitting and stretching properly. I would rather leave the old one on. If you will be good enough to advise me as to the simplest and best method so that my man can easily understand it, I will be very much obliged. W. E. J. L.

If your present canvas deck is worn out, I don't see what else you can do to get a tight deck than to take the old canvas off and have it recanvased. You can, of course, put patches over the worn spots by using the same grade of canvas as the deck is now made of, and set it in marine glue or a thick, heavy paint. and tacking the edges with galvanized tacks, and paint the outside, together with the rest of the deck, afterwards. This, however, makes an unsightly looking deck.

It is not much of a trick to recanvas a deck, though the rail and beading have to be taken off in order to take the old canvas off and have the new one set properly. Jeffery's marine glue is about the best composition to use for this work. After cutting the canvas to the shape of the deck, spread the glue on the surface of the wood with a stiff wire-bound brush, leaving on a good body; lay the canvas on the glue, being careful to get it on straight with the edges even all around the sides; pass an ordinary *warm* flatiron over the canvas in order to smooth out the wrinkles and make a perfect contact with the wood. Another method of application is to coat the canvas on one side and lay it, glued side downwards, on the deck, passing the iron over as before—the canvas will then be found perfectly waterproof, and adhere tightly to the wood. A few galvanized tacks should then be added to the edges and angles where necessary. Place the can of glue in a kettle of hot water for a short time if too thick to work easily.

Locating the Knock of a Motor

Charleston, S. C.

Can you tell me how to locate the cause of the knock which has occurred in my 3-cylinder, 4-cycle engine which heretofore has been running very smoothly? It has recently developed a pronounced click that is very annoying, especially when it is running under full load. I have taken the engine apart and tightened up everything and I could not find anything wrong. I would be glad for your advice. W. B. B.

The knock, or "clicking," as you describe it, may be caused by a number of minor defects that you might overlook in overhauling your engine. Loose wristpin or connecting rod bearings would be indicated by a knock, while if the valve stems have been hammered down so that there is much clearance between the ends of the stems and the ends of the lifters it would cause a very sharp "click" every time the lifter hits the stem. If the wristpin or its bushings show wear, it can be remedied by replacing the bushings. If the wristpin shows but a small amount of wear a new bushing with a smaller hole than the original one will remedy it, though a new wristpin is the best.

The plunger pump may often cause a knock that is sometimes very annoying, while a loose throttle valve or a loose flywheel may also cause the trouble. To locate the latter, place a block of wood under the connecting rod and resting on the crank case to prevent the crank shaft from turning. Then try to move the flywheel and if it is loose it will be at once apparent. If not, any play that is apparent is in the wristpin bearing. It is hard to give you any definite advice until you have first located the cause of the knock.

Weak Batteries with a Make-and-Break Outfit

Detroit, Mich.

I have a single-cylinder, 4-H. P., make-and-break engine, and have trouble with my ignition system, due to the rapidity with which the dry batteries which I use run down. A new set, each unit of which measures up to the standard of 20 amperes, will deteriorate to 5 amperes after using the boat but six or eight times in two weeks. They still give a good spark, though the motor does not run well on them. I cannot believe that the trouble is with the coil and that I am getting too much resistance at the expense of battery strength, as the coil has previously given satisfaction.

I keep these batteries in a waterproof box with the coil alongside of them, but separated by a board. I have used great care with the batteries, taking them out of the boat and into the locker house whenever they are not in use. What is the trouble? H. L. L.

With make-and-break ignition systems, dry batteries run down somewhat more quickly than in the jump-spark system, unless the adjustment of the breaker points is just right. These should be in contact the very shortest possible time, for if the contact holds a little bit too long you can wear out your batteries in less than half the usual time. Most make-and-break motors are so arranged that you can adjust this contact and can set the points so that they break very quickly after they come in contact. Watch this make-and-break mechanism and see if the above is the cause of the trouble. In testing your batteries with an ammeter do not keep the ammeter in the battery circuit too long, as it short-circuits the battery and exhausts it very quickly. You will find that you will get better results in a dry battery with make-and-break ignition system by connecting them in multiple series.

Rigging a Topping Lift

Milwaukee, Wis.

I have a catboat of the "Sea Wren" type and would like to know the best way to rig the topping lift. I have tried several ways, but somehow I do not get it right. For instance, how should I secure it to the boom?

My point is this: When I am in a stiff breeze and have to jibe, to do so I settle my peak. The boom then is dropped unless I have a topping lift on, and if the latter is secured by a cleat it must, of course, be let go. How can I hold up the boom when I have let it go, for it cannot be jibed without? A. H.

In a little boat such as yours a purchase would not be necessary on a topping lift, and the latter could be made fast to the end of the boom, either with an eye splice through an eye in the strap round the end of the boom, or with a screw eye in the end of the boom, the upper end being carried through a single block at the masthead, and down to a cleat at the foot of the mast. Or it may be made fast through an eye in the masthead carried down through a wooden chock on the after end of the boom, and brought inboard along the boom to a cleat that can be reached from the deck.

To obviate the necessity of lowering your peak in jibing, which I presume you do to pass it under the lift, I would say that it is quite common now in rigging a yacht to have two lifts one on each side of the sail, the outboard end made fast about one-fifth of the distance in from the end of the boom. The sail is set between these two lifts. This could be rigged as I have described above, the lee one being slacked off, and the weather one tightened wherever it is necessary. In this way, if it is blowing hard, the sail is bellied out and the lee lift can be slacked so as not to cause a crease across it. In jibing, slack off the one holding the boom and take up on the other.

Masts and Spars for a Dory

ANDOVER, MASS.

Can you give me any information in regard to stepping a mast in a sailing club dory? The boat I am building is 20 feet overall and 14 feet waterline. I am rather in doubt as to the exact dimensions of my mast, boom and the hoist of the sail. All of these I realize are very important features in order to obtain the most speed out of a boat. Also can you tell me whether a leg-of-mutton or bat-wing sail is preferable on a boat of this style? W. F. T.

In a 20-foot overall dory the amount of sail you would probably carry would be 130 to 135 square feet. This is about the area that the racing dories carry, and is about all that you would want unless your boat carried ballast. I suppose your boat would be rigged jib and mainsail, and if it is a leg-of-mutton rig the mast should be about 20 feet in length from heel to truck. The hoist of the sail would be about 16 or 17 feet, with a boom 13 or 14 feet long, depending how far the mast is stepped from the stem. The jib would be 5 or 6 feet on the foot with a hoist of about 8 or 9 feet. These figures would, of course, be apt to vary a little to suit a particular boat, though a sail plan can be drawn to scale over a profile drawing of the boat.

The mast should be about 3½ inches in diameter at the base, tapering to 2 or 2½ inches at the truck. The boom should be about 2 inches in diameter at the widest part if the foot of the sail is laced to it.

In regard to comparison of leg-of-mutton and bat-wing, both styles of sails are used in sailing dories. The bat-wing gives a little more sail area on the same length of spars, but it also gives more sail aloft, which makes her a little harder to handle in a breeze, if she is in any way over-canvased. With a very slight curve in the leech, a sail with a couple of thin battens would be all right.

Rudder for a 30-Footer

CAPE MAY, N. J.

I have a 30-foot power cruiser which I have great trouble steering, as my turning radius is several hundred feet with the wheel hard over. Can you tell me what the trouble is? Also the boat will turn to one side more quickly than she will to the other. The boat draws 3 feet of water. Is the trouble with the rudder? L. H. G.

Your trouble is probably due to having too small a rudder on the boat, though the design of the hull would also affect the steering a good deal. If she has a long keel and a deep forefoot she would turn much more slowly than if she were cut away forward with a deep skeg aft, and she would swing slowly. Though you haven't given us the size of the rudder, a larger one would probably help you. You will probably have to add to it in a fore-and-aft direction, as the rudder now probably occupies all the space between the bottom of the skeg and the rudder port. A boat will usually turn easier to one side than to the other, according to whether she has a right or left-handed wheel, but this should not be sufficient to make any material difference in her turning qualities.

Concerning a Whaleboat Model Power Launch

SPRINGFIELD, VT.

I am considering building a whaleboat model cruiser 8½x37, designed by Small, of Boston; good lines, displacement 12,000 pounds. What speed within ¼ of a mile will I get with a 12-15 H.P. Buffalo engine?

Would it be any assistance when using sail to add 3 or 4 inches more keel than indicated by plans? Would bilge keels put lower down than usual, rather larger and longer, aid in carrying sail? Without any power how fast could I go and how much sail would it be advisable to carry on such a boat? With wind blowing 20 to 30 knots how fast could I go with a *fair* wind per hour? Could I sail and how much headway would I make with wind striking boat exactly sideways? If boat was going north and wind from east or west could I keep straight course and how fast could I go with 30-knot wind?

What I want to find out, as near as I can, is how much I could use the boat without power if I had all sail that it would be practical to carry on a launch? Would it be possible to sail half the time on an average, and with sail could I average half the time over 3 or 4 miles per hour? Can you suggest any book on building launches from 30 to 40 feet and over. I have books that treat of boats under 20 feet only. Can you tell me size and kind of flags needed on boat 37 feet long, and the size of the flag for bow and stern. Will a metal boat (dinghy) stand salt water without rusting and how many years if kept well painted?

As I am inexperienced I shall be much obliged for information on this subject. F. L. M.

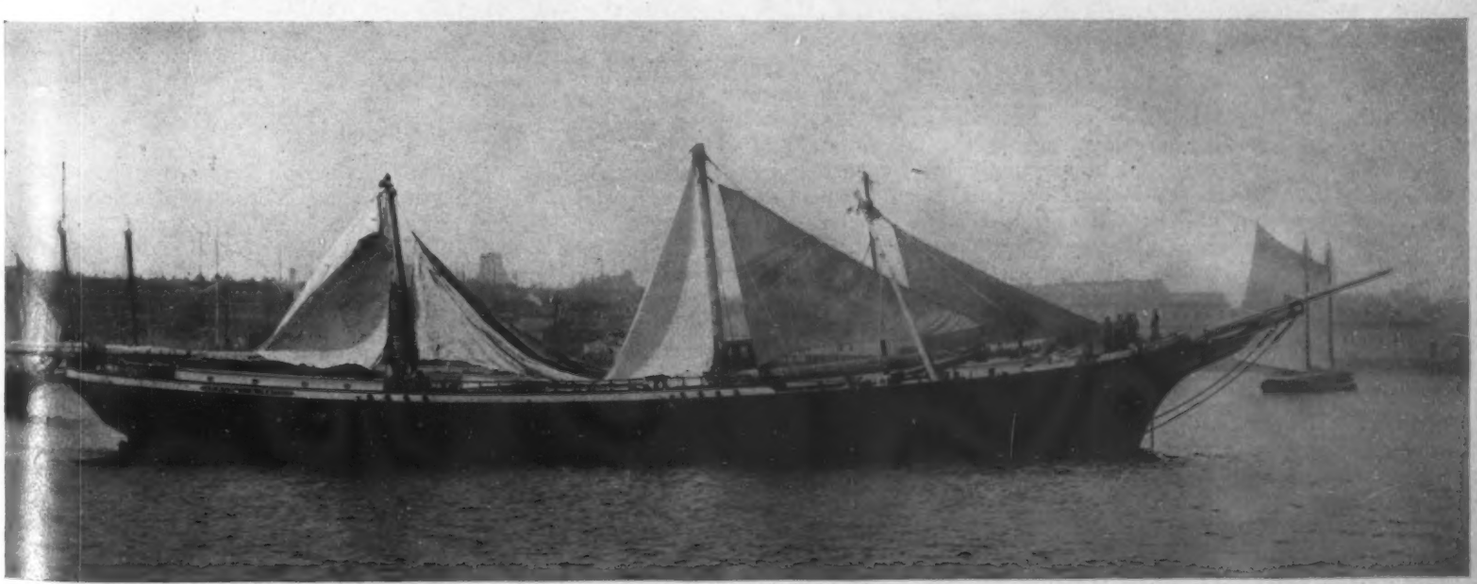
Without knowing the exact measurements, shape, section and the like of the boat in question, it is almost impossible to predict the speed that can be attained with a certain power. In fact it would be necessary to see either the boat itself, or detailed plans of its construction before any accurate estimate could be made. However, I should judge that with the motor in question, installed in the boat as described, a speed of between seven and eight miles an hour could be attained.

In regard to her sailing ability, three or four inches more added to her keel would probably lessen the leeway she would make in going to windward, and this would, of course, help her sailing somewhat. Bilge keels would not help her materially in carrying sail. It is also impossible to say what speed you could get out of such a boat under sail. It would depend entirely on how much her lines were designed for sailing. With a wind blowing from 20 to 30 miles you probably would not want to carry sail on the boat unless she is well ballasted, particularly if she is an open boat. A 30-mile breeze is a pretty strong wind for pleasure sailing. If you could carry sail with this breeze you could make good headway with a fair wind. With the wind striking the boat sideway, or on a reach as it is called, you could probably get as good or better speed as with a fair wind, but you would have trouble in steering a straight course with a beam wind of 30 miles strength, owing to the fact that you would have to luff frequently, and unless the keel was designed for sailing she would probably make leeway. With the size rig you can carry on this kind of a boat you could not get very much speed out of her in ordinary summer breezes, possibly 3 or 4 miles.

Metal dinghies will stand salt water for several years if they are kept well painted and are taken care of. You would be safe in buying one, though, personally, I prefer a wooden boat.

In regard to the flags needed, on a boat of 37 feet length I would say that the ensign should be about 5x3 feet, while the club burgee, which you would probably carry in the bow, would be about 16x24 inches.

For books on boat building I would say that there are not many that cover the subject with boats as large as you mention. There are a number of books on building small boats from 18 to 25 feet in length, and a number of technical books on building ships, but nothing in between.



UNDER JURY RIG. SCHOONER RACHEL AND MAUD WORKING INTO BOSTON AFTER BEING DISMASTED AT SEA

British International Trophy Challengers. Definite news in regard to the makeup of the team that is to represent England in the British International Trophy Race this year is still more or less uncertain and unreliable. Mr. Mackay-Edgar is again in the field with a new boat, though it is said that the engines will be the two Astell motors that were in last year's Maple Leaf III. Mr. Edgar had rather a disappointing experience in the past two races, but he seems to be sticking to it with a persistence that is worthy of commendation. It is said that Mr. Hanbury's new Thornycroft designed hydroplane is to be fitted with six Vauxhall engines with a total horse power of between 300 and 350.

Another entry for the race has been received from Mr. Fred May, of the Sunset Motor Yacht Club, the boat's name being Defender III. It is said that this boat has already made 36 knots with the engines not opened up, but she will have to show very much better speed than this to have any chance in the Internationals this year. Whether or not the Duke of Westminster will have a boat at the line this season is uncertain; but considering that the Duke had owned the most likely boats in the last three or four contests it seems probable that he will be found with a boat this year.

There has been much talk of an entry from France but up to the present writing nothing has materialized from that quarter. None of the new French boats showed the phenomenal speed expected of them at Monaco and this may have some influence on a possible entry from that country. A boat is being built there by Despujols-Tellier with two Panhard motors developing 600 H. P. that is a possible challenger.

The situation as regards defenders has not changed materially since our announcement in the April issue. Commodore Pugh, of the Disturber II, is having a new boat built in Chicago from which fifty miles an hour is expected; and, while it is too early, of course, to prophesy, it is hoped that this speed may be attained. Though a 50-mile boat did not materialize last year it is within the bounds of possibility this season.

The Lessons of the Titanic Disaster. The point which is borne home to us most strongly in the recent appalling disaster to the world's biggest steamship, the Titanic, and one which should be especially felt by yachtsmen and small boat sailors, is the lack of precautions on the part of the owning company, and of the officers of the ill-fated ship as well—precautions which common sense dictated and which, had they been heeded, would have averted the enormous loss of life, a loss greater than ever before had been entailed by the sinking of a single ship. Probably the neglect of these precautions was due, not as one might hastily suppose to indifference or incompetence, but to the fancied security in the ship herself, and in the officers to keep her clear of any impending danger.

To carry lifeboats with a total capacity of but nine hundred odd with a licensed carrying capacity of 3,300 souls, shows a lack of consideration on the part of the owners and builders of the lives of their passengers, even if they were within the rules of the British Board of Trade. It was not that more boats could not be carried but that the space was wanted for luxuries of the most modern resort hotel—Ritz restaurants, golf courses, gymnasiums, etc. It is hard to comprehend what our present civilization is coming to when it demands such luxuries as an indispensable part of its life. The whole tendency in steamship construction seems to be to disguise the fact that one is at sea.

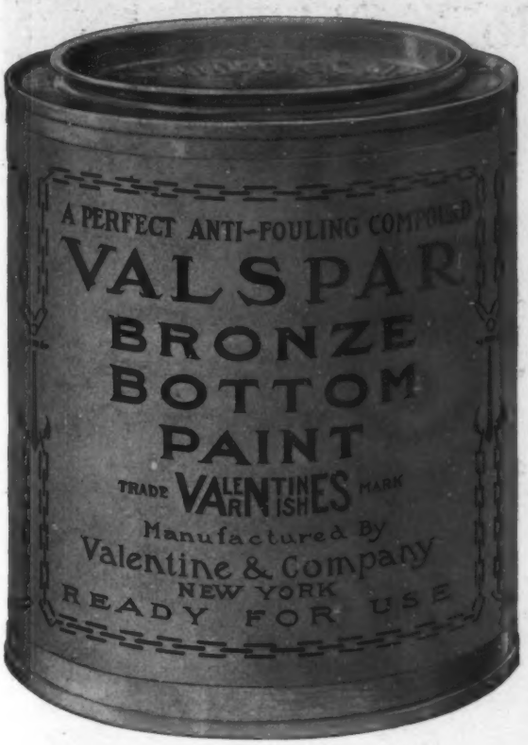
Even though the greatest precautions are taken in construction to eliminate all danger from collision, this should not deter all possible effort for the protection of passengers and crew in the emergency which may at some time arise.

Another lesson which may be learned from this disaster is the necessity of still training the crews of such vessels in seamanship—an art that seems to have fallen into decay among the deck hands of ocean merchantmen. There is no school like the old sailing ship, or the sailing yacht, for that matter, to train men to be resourceful in case of emergency, and teach them to act and think quickly. The average steamship sailor knows as much to-day about handling small boats as a North Dakota farmer; boat and fire drills as a rule are, at present, perfunctory and a farce, and are at best merely skeleton drills. A crew cannot be made proficient unless such drills are greatly expanded.

This has a direct bearing on those who sail boats for pleasure, and yacht club members should wake up to the fact that because a man goes to sea in a power boat he should not neglect to perfect himself in those elements of seamanship which were formerly the attributes of the sail boat. This accident again emphasizes the fact that it is not size alone that makes for safety, but the ability, care and forethought with which a boat is handled; and there is just as much safety in a small boat if built on the correct lines and handled by men who know their business as in the largest ocean steamship.

To Encourage Seamanship. In another page of this issue is a short article showing what one of the smaller clubs on Long Island Sound has done, not only to promote interest among its members, but to encourage the all around handling of boats under all conditions. In offering prizes for such events as races starting at midnight; races which start with the boats at anchor and sails furled, to and around a stake boat and back to an anchorage again; races starting with the crews of all the boats on shore; and races for getting under way in the most seamanlike manner and making a clean start are conducive of not only keen rivalry, but of ability in boat handling under all conditions. Other clubs could promote like events with much benefit to both clubs and members.

The Truth About Speed Records. As the open season for boating draws near, we begin to hear estimates of the probable speed of boats yet building, and already a number of wonderful records have been made. Everyone has been more or less misled in the past as to the performances of new boats that have been made in private, and by the announced speeds which they had attained—claims which in many instances were not borne out. Already the report comes in of a boat that has done a mile in 1 minute and 8 seconds, and, while not questioning in any way this particular record, the public should be slow to accept statements of speeds that have not been made over a verified course and accurately timed. Such fictitious speeds have been used in the past for advertising purposes, and while they have accomplished their immediate ends they have, in the long run, worked against those making the claims. Throughout the season, YACHTING will endeavor to verify new records before publishing them, or, if this is impossible, will call attention to the fact that the speed mentioned is *claimed* but not authenticated.



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One Experience

MESSRS. VALENTINE & COMPANY, DETROIT, MICH.

DEAR SIRS:—This spring I used your Valspar Bronze Bottom Paint on my yacht Ethel. She had previously run into place in several races, but in the next one after application of the Bronze Bottom Paint, which was in very light winds, where every little point may prove a big factor in scoring a win, she was returned the winner by eight and one-quarter minutes. This was on May 30, 1911, Detroit Yacht Club.

On June 17, 1911, in another just such a race of the Detroit Yacht Club, in light winds, but against a larger field, of the best outside, as well as the best local boats, the story was exactly the same, the time of finish in advance of next nearest being nearly as great.

I was then persuaded to try something else for the next race, and in that and several others she has not shown so well, so it is needless to say I shall return to the use of your Bottom Paint.

I should also say that during the two months your Bottom Paint was on, the bottom remained entirely free of all fouling, which I consider very good.

(Signed) DR. T. B. ALDRICH.

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For a National Commission to Govern Power Boat Racing

At the Council meeting of the American Power Boat Association held at the Waldorf-Astoria Hotel, May 14, the principle of establishing a commission for power boat racing was adopted unanimously. The secretary of the Association was authorized to get into communication with the secretaries of all other associations for the purpose of starting the machinery and attempting serious effort for co-operation. The petty jealousies and widely divergent views obtaining to-day should be set aside and an effort made to establish a commission whose representatives are to be taken from all established and properly organized organizations in the United States. This commission shall have the sole control of all racing matters, and shall harmonize the conflicting interests and methods of racing throughout the country; shall tabulate and record all events for reference, inspection and use of every club represented in the board; shall adjust the representation on an equitable basis and shall extend its membership to include all parts of the United States; shall bring about the adoption of rules for measurement classification, rating and, in short, control the whole field for the government of trials of speed and endurance and the settlement of disputes arising therefrom. Every branch of racing shall eventually be brought under the jurisdiction of this commission and it shall have complete sway in all matters relating to its field of sport.

This commission, while representative of its various constituent bodies shall have absolute power and independence of action. On this basis only can an effective organization for control operate for the best interests of the whole sport.

It is hoped that a thoroughly representative and capable body of men will eventually be put into the control of racing matters, and the initiative having thus been made should bring like action on the part of all other associations to secure for the sport some coherent and effective work in harmonizing that which is disorganized and futile in the motor boat world. It will, likewise, be a test of sincerity. Much has been written and said at meetings regarding this vital matter, but no effort has hitherto been made to reduce the subject to a concrete form. Such a governing body is a necessity in this country and would be of extreme value to not only the amateur but to the professional and the expert racing man. It should have the support of all motorboat men.

A new constitution for the A. P. B. A. was also approved by the committee and will be submitted to the association at the next general meeting, June 12, 1912.

Mississippi Valley Power Boat Regatta

The annual regatta of the Mississippi Valley Power Boat Association will be held at Davenport, Iowa, July 4th, 5th and 6th. The regatta committee has worked hard in securing funds for prizes, and cash prizes and cups will be offered in all of the championship classes, the 40-foot, 32-foot, 26-foot and 20-foot. It is expected that the fastest boats in the country will be at the meet, which will be the first big event in the United States this season. The cash prizes offered in the championship classes will be larger than in any previous racing event. A cash prize of $1,000 and a silver cup is offered for the first prize in the 40-foot class, with correspondingly valuable prizes in the other classes.

Bermuda Race to Start from Philadelphia

The Yachtsman's Club of Philadelphia has charge this year of the annual Bermuda race for power boats, and the event will be started from Race Street Wharf, Philadelphia, on Saturday, July 27th. The Yachtsman's Club has already pushed the race vigorously, and is aiming to make it as much of a success as was the famous Havana race of two years ago. Already some five entries have been received, most of them of Delaware River or Jersey coast boats. It is hoped to have more entries in the race this year than ever before. There are a number of New York boats that ought to be seen in the event, and their entries will probably be received in the near future. This is an excellent race and one that ought to be kept up, as it has done much to bring about the present seaworthy type of cruisers.

The first race took place in 1907 and there has been one every year until 1911, when the race fell through by reason of lack of entries. The distance from Philadelphia to Bermuda is about the same as from New York, approximately 670 miles. The conditions will be practically the same as those that governed the race in 1910. Commodore Whitaker of the Yachtsman's Club has worked hard to get this race, and to make it a success, and all those yachtsmen with seagoing boats should send in their entries to M. E. Brigham, chairman of the regatta committee. The other members of the committee are: Dr. Eugene Swayne, John H. Field, Chas. L. Lagen, Harry Edson, A. B. Cartledge, Jr., Ray Vanderherschen and F. Strassberger.

Forty-third Anniversary of Portland Yacht Club

The Portland Yacht Club, one of the oldest yacht clubs in this country celebrated its 43d anniversary with a banquet on April 26th. About 250 members and their guests took part in the ceremony, and the guests

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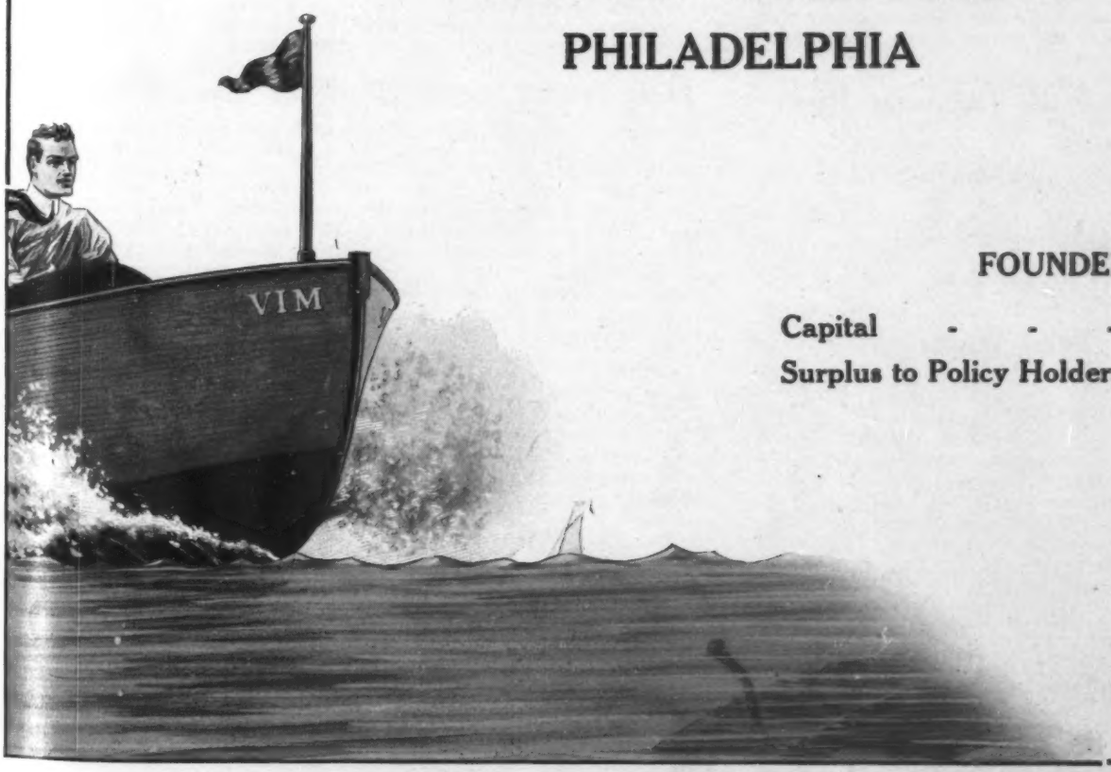

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of honor included Gov. Plaistead of Maine, the Mayor of Portland, and a number of commodores of other yacht clubs. Holman Day was the toastmaster.

The Portland Yacht Club is not only one of the oldest, but is one of the largest and most flourishing clubs on the New England Coast. The club expects a very active season, and is planning a joint annual cruise in conjunction with the Boston Yacht Club in July.

Program of Western Power Boat Association Regatta

The following are the trophies which will be offered at the W. P. B. A. Regatta, held during the water carnival week at Chicago, August 10th to 17th:

Championship of America, all classes: Prizes, The William Wrigley, Jr., Trophy, value $5,000; a $500 replica to he held; and a $1,500 purse. Forty-Foot Class: Prizes, first, Adam Weckler, Jr., Cup, value $1.000, and $1,000 purse; second, H. H. Porter, Jr., Trophy, value $250, and $500 purse. Thirty-two Foot Class: Prizes, first William C. Thorne, Trophy, value $500 and $1,000 purse; second, Irwin Bros., Trophy, value $500 and $1,000 purse. Twenty-six Foot Class: Prizes, first, Trophy, value $500, and $500 purse; second, Henry B. Clarke, Trophy, and $250 purse; third $150 purse. Twenty-Foot Class: Prizes, first Hotel Sherman Trophy, value $500, and $500 purse; second $250 purse; third $100 purse.

Boats are classed on their overall length only, and races are open to members of any yacht club. Boats in a lower class may enter a higher class. At least two boats must start to constitute a race. All races to be heat races and the best two out of three, with no handicap or time allowance. Entries close August 5th. Entry blanks may be had from Mr. John R. Young, manager. The Associated Yacht and Power Boat Clubs of America, Room 952, First National Bank Building, Chicago, Ill.; or by writing to YACHTING.

International Race off Chicago, August 10th

Saturday, August 10th, has been set as the date for the first contest for the Richardson cup between the Class P boat representing the Chicago Yacht Club and a boat from the Royal Canadian Yacht Club of Toronto.

The rest of the events will be sailed the following days, except Sunday. The races will be over triangular windward and leeward courses. The first named will be 10½ miles around, and must be sailed twice, making the distance 21 miles. The windward and leeward course is to be sailed over twice also. Each leg of this will be 4½ miles, making the total distance to be sailed 18 miles.

The races will be in charge of three judges, one to be appointed by each of the contesting clubs, these two to agree upon a third. There will be a scrutineer aboard each boat. The officials must be appointed before August 1st.

Whether the cup will continue to be known as the Richardson cup after the commodore of the Toledo Yacht Club, who presented it for competition, will depend upon the action of a committee which has this matter in charge. It is expected a new name will be chosen, however. One of those which finds most favor is the "Great Lakes International Cup."

Twenty-two-Foot Class for the Delaware River Club

The Delaware River Club at Torresdale, Philadelphia, will have some very interesting races this season.

Six, and possibly seven, of the members are working on a fleet of 22-foot, one design, V-bottom speed boats, which are expected to do close to 20 miles per hour.

Several of these boats are being built at the clubhouse, and every week end brings together an enthusiastic crowd.

Motor Boat Men Take Warning!

The following quotation from a New York press notice is self-explanatory:

"There is a likelihood of the Federal authorities trying to get more legislation for the control of motor boats before long, and this summer owners of motor boats will find the Department of Commerce and Labor, with the co-operation of the Revenue Cutter Service, hot on the trail of those who do not conform to the present regulations. Collector Loeb has been asked by the department to co-operate in suggestion of plans and methods for the control of motor boats in these waters. This matter has been referred to Capt. Emery, supervisor of the harbor, to devise regulations subject to the approval of the law division of the Collector. The fleet of motor boats has grown to enormous proportions, and there are so many small craft about the harbor and rivers that they are declared to be dangerous to traffic and life. Collector Loeb is said to be in favor of licensing the boats in the same way as automobiles are licensed and a bill may be introduced into Congress for this purpose.

"The motor boats have become such a nuisance along the Massachusetts coast that the Motor Boat Muffling Association has been formed for the purpose of enforcing the laws requiring muffling of motor boats. A bill is now before the Massachusetts Legislature which if it becomes a law will provide $25,000 to defray the expenses of providing two police boats properly manned which shall patrol the coast in the summer."

The New Small Schooner Class

The eight new one-design small schooners of the class organized last fall by Mr. W. Butler Duncan, Jr., N. Y. Y. C., are finished. The interesting fleet was brought to the western end of Long Island Sound from East Boothbay, Me., where they were built by the Rice Brothers Company, about the middle of May.

Five of the owners are members of the New York Yacht Club, while the others are well known among yachtsmen.

The yachts are 41 feet overall, 30 feet on the load waterline, 8 feet beam and 6 feet draught. They will carry 780 square feet of canvas.

Interesting series of races are expected to be sailed by the craft. Many of the Long Island Sound clubs will offer special prizes for the class, and the N. Y. Y. C. may also do so.

Ocean Race of the Yachtsmen's Club

The Regatta Committee of the Yachtsmen's Club has announced July 6th as the date for the club's annual ocean race. It was also decided that the race must be over 200 miles. It is more than likely that the race will start from one of the lower Philadelphia clubs on the Delaware River to Hampton Roads. Vice-Commander Brigham has made arrangements with the Hampton Roads Yacht Club to receive the visitors.

The entries for the race so far are: Vice-Commodore Brigham's Caliph, Ventnor Y. C.; Commodore George Fish's Lugeo II, Ocean City; Commodore Cartledge's Marguerite II, sailed by "Doc" Street, Keystone Y. C.; Commodore Dudley's Haji, Camden M. B. C.; Commodore Joseph Thompson's Isabella II, Ventnor Y. C. Commodore James Thompson, of Stone Harbor, who is at present in Cuba, will enter the Albatross.

The National Yacht Club, of Brooklyn, has also been invited to participate. The request for entries from this club is made jointly by the D. R. Y. R. A. and the South Jersey Y. R. A.

In a return race the men and the boats will go to the Baltimore Yacht Clubs, and then return to their respective clubs on the Jersey coast via the Delaware and Chesapeake Canal, making this one of the biggest yachting events on the coast this year.

Hempstead Bay Clubs Form New Organization

The Nassau County Yachting Association was organized at a meeting of delegates of various clubs on Hempstead Bay held early in April. Officers were elected as follows: Rowland H. Mayland, Hempstead Bay Y. C., President, and A. A. Dal Molin, Nassau Y. C., Secretary and Treasurer.

The object of the association, as outlined, will be to promote the sport of motor boat racing and sailing on the Long Beach Channel, to hold regattas in the course of the season and to supervise the dredging and buoying of the channel between Rockaway Inlet and Point Lookout.

The channel has been so charted as to give racing boats a 5-mile course, with two turns, and not less than 15 feet of water at low tide. The association plans to hold at least two big motor boat regattas in the course of the season, and events for sailing yachts.

Long Island Sound Handicap Class Elections

The annual meeting of the Handicap Yacht Racing Class, of Long Island Sound, was held on March 29th, and these officers were elected for 1912: President, G. P. Granbery; Secretary, Herbert L. Stone; Treasurer, R. B. Budd.

The report of the various committees showed the class to be in a flourishing condition, with some forty boats racing throughout the season, while the class as a whole furnished nearly one-half the starts in racing under the auspices of the Long Island Sound Yacht Racing Association. Efforts will be made to increase the membership this year, and it is expected that at least sixty boats will be sailed under the percentage mark during the season of 1912.

A Big Time in Detroit

Following the Great Lakes Regatta at Put-in-Bay, July 16-18, the city of Detroit, Mich., will have a week of racing that will attract all the fastest boats on the Great Lakes. This is the occasion of the celebration of the 211th birthday of Detroit, and that city is making elaborate arrangements for a big celebration the week of July 22d to 27th.

Match Race for Dixie, Jr.

The Reliance V, owned by J. J. Ryan, and the Dixie, Jr., built from designs by Clinton H. Crane, are to be matched in a race which will practically open the motor boating season in this section. A race between these two boats will be interesting because it will try out two different types of motor boat design and engines. There is also a money stake dependent on the result.

The two boats will meet somewhere near New York City, and race over a course properly surveyed, so that an authentic record may be established. The course will probably be about 30 miles in length.

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Catskill — Hudson — Albany
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CUT OUT THIS PAGE FOR REFERENCE

Morris Whitaker Goes to Nyack

Morris M. Whitaker writes us that he has given up his office in the Metropolitan Tower on May 1st, and moved out to Nyack, N. Y. This does not mean, however, that Mr. Whitaker has any idea of giving up the work which has placed him now well in the front rank of American designers of power craft. On the contrary, the change, it is believed, will have the doubly beneficial effect of providing an atmosphere more congenial to his work, as Nyack is one of the oldest shipbuilding towns in the country, and of making it possible to have boats built from his designs directly under his eye. As by far the greater part of a modern naval architect's business comes to him through the mail, this seems a very wise arrangement, especially when, as in the present case, one chooses a location near New York.

It has always seemed to us that the distinctive feature of Mr. Whitaker's work lies in the fact that while he has managed to keep a little ahead of the general trend his boats have always been sane and sound; in other words, that he has made use of originality based upon experience.

That he has had experience unusual in variety as well as in amount is readily seen by a glance back over his interesting career. After graduating from Yale, where he specialized in mathematics, Whitaker went to work with the Newport News Shipbuilding and Dry Dock Co. as a sort of "special apprentice," with the opportunity to get a line on the work in each of the different departments. From there he went to Cornell for post-graduate work, and, getting through with that in the spring of '98, he went into the office of C. D. Mosher where he worked on the plans for C. R. Flint's famous Arrow.

About this time Mr. Whitaker became convinced that designing the little fellows offered the best opportunity for a young man with ambition; and accordingly he took a trip across the water and spent six months studying small boats in Germany, Holland and France.

Upon his return in 1900 Mr. Whitaker designed and built his first power boat, which he tried out upon himself. She was 30' x 4½' and made 12½ knots—good work for those days.

From then until 1905 he was in Canada, interested in a boat building plant for motor boats and during that period he designed and built no less than 298 motor-driven craft and some sail boats.

Between 1900 and 1905 Mr. Whitaker designed some 300 motor boats. In 1905 he accepted a position as technical editor upon the staff of *Motor Boat* but still managed to do some original work on the side, and in 1909 he hung out his shingle in the Metropolitan Tower, where he has been ever since, and where his best-known designs have been turned out.

Mr. Whitaker has also been identified with motor boat racing, both long distance and local, and has been on and connected with the committees which have run all the Harmsworth Cup Races, the Hudson-Fulton Celebration Races and the Manufacturers Carnival Races since they first started. His boats have won a good proportion of both long-distance and local events, and in the appearance of all of them he has written the "Whitaker" personality in the lines to a very marked degree.

We believe in Mr. Whitaker's work and wish him all success in his new home.

Calendar of Racing Events for May and June

May 30.—Harlem Y. C., annual.
Bridgeport Y. C., spring.
South Boston Y. C., M. Y. R. A., and interclub open.
National Y. C., Y. R. A., Gravesend Bay.
Philadelphia Y. C., spring cruise to Chesapeake.
Camden (N. J.) Motor Boat Club, speed boats.
Relay race to Albany, Hudson River Y. R. A. Start from New York M. B. Club.

June 1.—Bensonhurst Y. C. Y. R. A., Gravesend Bay
Knickerbocker Y. C., annual.

7-8.—Camden (N. J.) M. B. Club cruisers.

8.—Manhasset Bay Y. C., annual.
Mosquito Fleet Y. C., M. Y. R. A. and interclub open.
Atlantic Y. C., Y. R. A., Gravesend Bay.
San Francisco Y. C.

8-9.—Race for hydraeroplanes and hydroplanes, on Hudson River, between Columbia Y. C. and Colonial Y. C.

15.—Larchmont Y. C., spring.
New York C. C. Y. R. A., Gravesend Bay championships.
Trenton (N. J.) Y. C.
Bridesburg (Pa.) M. B. Club, speed boats.
Crescent Y. C. (Owl's Head, N. Y.)

16.—Hudson River M. B. Club, open race around Manhattan Island.

17.—Boston Y. C., M. Y. R. A., open, at Hull.

21.—Seawanhaka-Corinthian Y. C., special.
Keystone Y. C. to Overfalls Light and return.

22.—Crescent A. C., Y. R. A., Gravesend Bay championship.
Corinthian Y. C., ocean race.
Seawanhaka-Corinthian Y. C. annual and New York A. C. race to Block Island.
Chicago Y. C.

22-23.—Tappan Zee Y. C. to Hudson and return.
Colonial Y. C. (N. Y.) to Cornfield Lightship and return.

23.—Lakewood Y. C., Lakewood, Ohio.

25.—Indian Harbor Y. C. race to New London.

28.—Seawanhaka-Corinthian Y. C. race from New London.

28-29.—Cambridge (Md.) Y. C.

29.—New Rochelle Y. C., annual.
Eastern Y. C. special open race at Marblehead.
Atlantic Y. C. Y. R. A., Gravesend Bay, championship.
Maryland M. B. Club (Baltimore) 200 mile race for cruisers.
New York M. B. Club race to Albany and return.
South Jersey Racing Association.

30.—Hudson River M. B. Club race. Triangular course off club.

Great Lakes Power Boat League Regatta

The third annual regatta of the Great Lakes Power Boat League will be held at Hamilton, Canada, under the auspices of the Royal-Hamilton Yacht Club on August 8-10. The following program of events has been arranged:

August 8.—Five-mile race for boats with two cylinders or less—3 prizes; 2-mile race, free for all—3 prizes; 10-mile handicap race—3 prizes; aquaplane demonstrations.

August 9.—Forty-foot class, 20 miles—3 prizes; 26-foot class, 20 miles—3 prizes; 20-foot class, 20 miles—3 prizes; 40-foot displacement, 20 miles—3 prizes.

August 10.—Cruisers, 14 miles, Hamilton to Bronte and return—3 prizes; 32-foot class, 20 miles—3 prizes; annual international motorboat handicap race, open to any boat of 15 miles or over, 20 miles—4 prizes; Great Lakes Power Boat League championship 25 miles.

George Cup Race July 30th—August 1st

The dates for the George Cup races for this year have been fixed by the committee representing the various clubs on Lake Ontario on which committee former Commodore Frank H. Herrick represents the Crescent Yacht Club. The races will be held at Toronto, the present home of the George cup, which was taken last year for the second time by the Vivia II, of the Royal Canadian Yacht Club, and the races will open Tuesday, July 30th, and last for three days, the last heat being sailed on Thursday, August 1st. Some time ago the Crescent Yacht Club challenged the Royal Canadian Club for the race, which challenge was accepted. The "Watertown," the new boat of the Crescent Yacht Club last year, which failed because of not being able to stand up under full canvas in a heavy wind, is now having 750 pounds more of lead put on her keel, which it is believed will make her the equal of any boat in Class R on the lake, and give her a good chance to bring the cup back.

New Name Proposed for the Oswegatchie Yacht Club

At the recent meeting of the Oswegatchie Yacht Club, Mr. Charles D. Hoard was elected Commodore with the following officers: Vice-Commodore, Harry A. Lord; secretary, Charles R. Flos; treasurer, Ralph Tallmann. Trustees: Captain D. H. Lyon, J. C. Howard, Felix Hulser, E. L. Strong, Andrew Irving, Isaac P. Wiser of Prescott. A. R. Porte and C. H. Simonds. It is proposed to change the name of the organization to the Ogdensburg Yacht Club. The club starts off with a strong membership and every promise of an active season this year.

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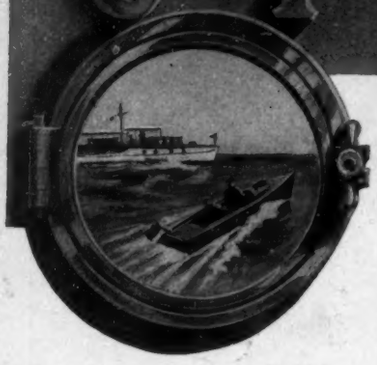


Trial Trip of 20-Foot Elco-plane

The accompanying photograph shows a 20-foot Elco-plane owned by Commodore August Heckscher on its recent trial trip at the works of the builders, the Elec. Launch Co., Bayonne, N. J. This boat was exhibited at the New York Motor Boat Show, where it attracted a great deal of attention, and is 20 feet in length, 4 feet 8 inches beam, and is equipped with a 60-H.P. 6-cylinder Elco gasolene engine.

The Elco-plane is a distinctly new type of hydroplane on which this company has applied for U. S. Patent. Realizing that hydroplanes having steps built into the hull are either heavy or structurally weak, the bottom planking of this boat was made continuous, the planes being attached to the bottom of the boat, forming steps on which the boat runs when planing. These planes are made of thin bronze plates and have a corrugated section, giving them greater longitudinal strength and a minimum resistance to the boat's motion forward, with a maximum resistance to any side motion.

The company claims that with this design they can carry considerably more weight than other hydroplanes and still plane easily, and that, therefore, the life of these boats is as long as that of the ordinary craft. This boat is equipped with hoisting shackles, as it will be carried by the owner on the davits of the steam yacht Anahma.

Watertight bulkheads are provided fore and aft, dividing the boat into three compartments, any two of which have sufficient air capacity to float the boat in case of accident. The fastenings throughout are of copper and bronze. The decks and interior woodwork are finished in selected mahogany. The boat is arranged to carry four comfortably on cushioned seats forward of the engine compartment. The helmsman steers and has within easy reach, the engine controls and reverse lever, enabling one man to handle the boat.

The engine is located under a metal hood of special Elco design. This hood gives full protection from spray, and can be readily lifted to give easy access to the engine compartment. The engine is of the 4-cylinder type 5-inch bore by 4¾-inch stroke with the cylinders cast in pairs.

The Elco forward drive is employed, the propeller shaft being parallel to the engine shaft and passing under the engine. The Elco clutch and reverse gear are located just forward of the engine, under the driver's seat, with the reverse lever adjacent to the driver. A copper gasolene tank of 50 gallons capacity is located under the after deck, the gasolene being raised to the carburetor by air supplied from the air pump on engine.

The first trial trip of the Elco-plane took place on Saturday, May 11th, when the boat proved herself not only wonderfully fast, easily exceeding her guaranteed speed of 35 miles, but remarkably seaworthy and free from pounding. The boat when carrying four passengers, rises on her planes within 5 seconds from a standing start. To illustrate her stability when at rest it required a weight of 700 pounds on the coaming to heel her down to the gunwale. The shifting of two people from side to side when the boat was planing did not give any apparent list.

What impressed a casual observer the most was that the boat handled equally well at high and at low speeds, backing readily to either starboard or port, and being under perfect control at all times. Another noticeable thing was the dryness; when planing the freeboard is materially increased and absolutely no water came aboard even when running with the wind abeam. The boats are not designed primarily for racing, but for high-speed yacht tenders, affording the maximum comfort and safety, all of which conditions they have fulfilled.

For a Safeguard Against Fire

Pyrene squirt gun fire extinguisher.

The danger of fire which is ever present on motorboats and auxiliaries can usually be traced to a leak in the gasolene tank, or in the connections along the pipe line from the tank to engine, the gasolene escaping into the bilge and engine pit. If this gasolene ignites it makes an exceedingly difficult fire to handle. Water has a disastrous effect on burning gasolene and oils, as these substances merely ride upon the surface of the water and a greater burning area is presented. Sand, when used in large quantities, will extinguish a small amount of burning gasolene or oil; but the fact that sand, even in small quantities, will render the working parts of the engine useless if it come in contact with them presents a danger equally as great as the fire itself.

In order to understand the benefits derived by fighting a fire with Pyrene, it is necessary to understand what the substance is and how it works. Pyrene is a purely organic combination of materials, having an aromatic odor and a high specific gravity; it contains absolutely no acid, alkali, salt or moisture. It will not stain the most delicate fabric or corrode the most sensitive mechanism; it will not freeze or deteriorate at 60 degrees below zero F.

When this liquid is ejected onto a burning surface it is immediately volatilized into a non-combustible gas, which is heavy and which surrounds the burning material, cutting off the air supply necessary for the life of the fire and thereby extinguishing it. It is well known that any fire can be smothered—Pyrene smothers the fire with a non-combustible gas, which penetrates every crack or crevice where gasolene lingers. The makers of Pyrene say that by virtue of its organic structure, and also from the fact that it contains no moisture, it is a non-conductor of electric current, no matter what the amperage or voltage may be. This insures the safety of the person operating it.

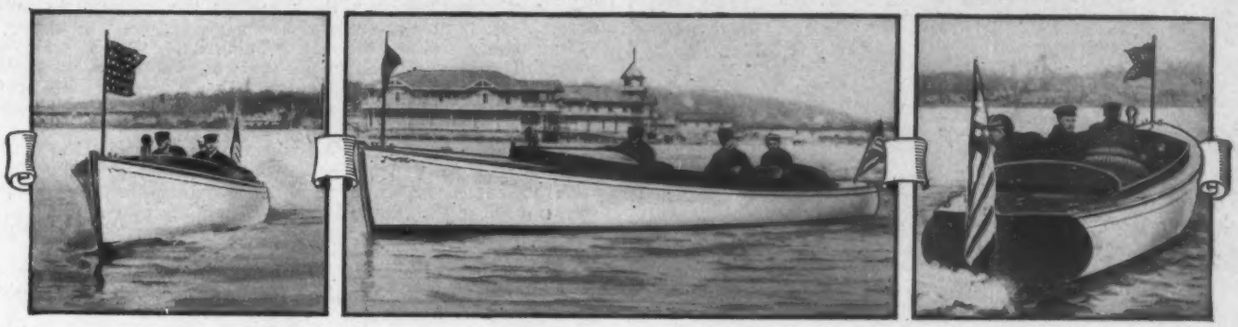
When Pyrene liquid comes into contact with an electric arc it begins to volatilize with rapidity, and it is this rapid volatilization which extinguishes the arc. The arc is simply volatilizing metal or carbon, and as soon as this metal or carbon gas has been brought down to temperature below the vaporizing point the arc cannot exist. Pyrene cools these metallic and carbonaceous gases below the vapor point.

The receptacle for ejecting the Pyrene is a simple, double acting pump, having a floating feed valve, capable of drawing in liquid from either end, thus insuring the total usage of the contents of the reservoir irrespective of the position of the extinguisher when in use. The extinguisher weighs five pounds when filled (one quart being the capacity), and is fourteen inches long, made in brass or nickle plate. They are approved by both the Underwriters Laboratories and the U. S. Steamboat Inspection Dept.

20-Foot Elco-plane on her trial trip when she exceeded her guaranteed speed of 35 miles an hour.

Speedway Runabout

ARRIVING LINGERING *and* DEPARTING



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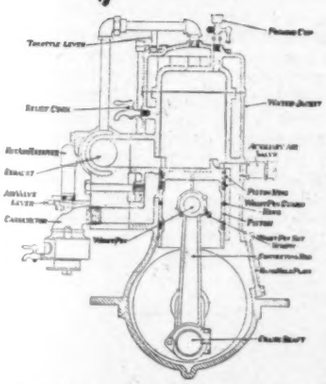

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The Motor that propelled the Sea Bird across the Atlantic Ocean, thereby proving it is the most reliable and durable Motor on the market today.

The up-keep cost of the KNOX is very low. It really means they are the cheapest Motor to buy and also the highest grade.

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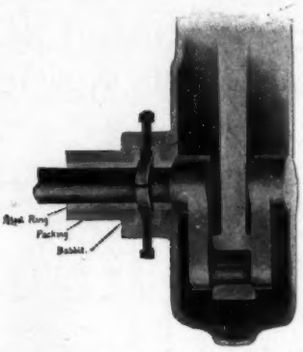
Tugboat Benita of Jacksonville, Fla., powered with a 54-H.P. Buffalo engine.

A 54-H.P. Buffalo for Towing Purposes

The advent of the gasolene engine is rapidly pushing steam out of use as power for towboats, especially in vessels under 90 feet in length. This is a perfectly natural transition as a gasoline engined boat can be operated very much more economically than one propelled by steam, both in the matter of crew and fuel expenses. A great many of these towboats all over the country are equipped with Buffalo heavy-duty engines, and the photograph which we reproduce here shows the Benita J, a boat used for towing on the St. Johns River, Fla., the vessel being owned by L. W. Johnson and W. T. Burke, of Jacksonville, Fla. A great deal of heavy traffic comes into Jacksonville, and this boat is often asked to do work equal to that demanded of a steam tug in towing heavy vessels to sea against the strong tides of the river, a distance of 25 or 30 miles. This fact speaks well for the reliability of the Buffalo power plant that is in her.

Economical Gas Production in Two-Cycle Engines

The little appliance which we illustrate herewith has lately been invented by Mr. K. Rosholt, of Eau Claire, Wis., and is intended not only to save gas in operating two-cycle engines, but also to make them more flexible as to speed. One of the arguments used against two-cycle engines is that in order to make the crank case gas tight it has been necessary to make the bearings too tight, and consequently lose a great deal of power by friction.



Appliance used on Northwestern motors to obviate loss of compression in crank case and add to flexibility.

As everyone who is familiar with gasolene engine construction knows, the more gas mixture that can be compressed in the crank case of two-cycle engines the larger the charge that will be forced into the cylinder at each stroke and an accordingly stronger power stroke. For this reason it has been the endeavor of manufacturers to make this crank case of as small proportions as possible to allow a swing of the crank, also to put on balance weights on the crank shaft and in other ways reduce the space.

To avoid leakage and reduction in this compression it has heretofore been found necessary to make the bearings around the crank extremely close, otherwise considerable compression would be lost. This accounts for the fact that a two-cycle engine does not show the same flexibility as the four-cycle in swinging the fly wheel or cranking the engine.

This new invention obviates this trouble entirely, and being extremely simple, it seems as if it was of great value to two-cycle engines. It consists of a piece of square graphited hemp packing fitting closely around the crank; against this are held two half round steel rings each held in place by a set screw. This means an absolutely gas tight bearing, at the same time allowing a reasonably loose bearing, as in any four-cycle engine. Wear on the crank or in the crank bearing does not affect the power of the engine because with a half twist of the set screw the packing is tightened against the shaft. The result is, the makers state, that engines equipped with this appliance have that elastic spring when turning the fly wheel against compression common to the high-grade four-cycle automobile engine, thus giving more power for the same size of cylinder and a great deal more flexibility, allowing the engine to be run at extreme high speed or very slowly, as desired, not having the tight friction of the crank against the babbitt to overcome. The Northwestern Steel and Iron Works, 302 Spring Street, Eau Claire, Wis., are now equipping all Northwestern motors with this device. They issue a very attractive catalogue.

The Value of Feathering Propellers on Auxiliaries

The principal drawback to installing power in sailing craft is on account of the drag of the propellers. This objection has been almost entirely overcome by the Noyes Machine Co., of South Portland, Me., manufacturers of the Thompson Automatic Feathering Propeller.

In this propeller the blades are so pivoted on the hub that they fold back automatically the instant the engine is stopped. The pressure of the water on them from the revolving of the shaft when the engine is started throws them into working position, which they keep as long as the engine is running. There are no levers or gears to bother with and the blades go to dead neutral when stopped, all drag and resistance of the solid wheel being thus overcome.

This drag caused by using a solid wheel compels some of the large fishing schooners to run their motors the entire time in order to get around. In light airs some of them have to start up the motor in order to have the vessel come about, it being impossible to do so with the sails alone. The Noyes Machine Co. says that one skipper told them he would not take charge of a vessel unless it had a feathering wheel as he could not stand the nervous strain in trying to get sailing qualities out of a craft dragging a solid wheel.

One of the best lobster-smack men on the coast has said by having a Thompson wheel that he can sail into bays at night when he has a breeze without fear of fouling his propeller in the warps and buoys of the lobster traps, for the motor is at rest, and the blades are feathered. On a trip of a few weeks he thus saved enough on his fuel bill to offset the cost of his feathering propeller.

The captain of a sword-fisherman states that he used on a five weeks' trip but 60 gallons of gasolene, while some of the fleet with solid wheels used nearly eight barrels.

For a power tender that is to be towed or for a boat that is rowed or paddled, the Thompson small propeller is of great value.

Some of the large fishing craft have found their feathering propellers have stood the banging of the ice well during the past winter, for if they strike obstructions, the blades will turn at the swivel, and pass over unharmed.

A Handy Knife

Every man that uses a boat knows the value of having a knife in his pocket that will really cut. Realizing this, and also the fact that a knife could be made a handier instrument than it is at present, the Thomaston Knife Company, of Thomaston, Conn., have recently put on the market special knives for the use of yachtsmen and campers. The Yachtsmen's knife not only has a large steel blade of the best material and workmanship, but on the reverse side has a marline spike which will be of great value to the boatman. There is a small shackle on the end for attaching a lanyard to go around the neck, so that the knife will not be lost. The length of this knife, with marline spike, is 10½ inches overall. The Camper's knife has a spoon and fork in addition to the blade.

A New Gray Publication

One of the most interesting books that has reached us this season is a publication just received from the Gray Motor Company, of 540 U. S. Motors Building, Detroit, Mich., entitled, "A Book of Boats." This is not only a novel, but an extremely educational piece of advertising literature, as it contains photographs of some 250 motorboats equipped with Gray engines. Believing that a photograph of a boat was of much more value than a testimonial letter from the owner, the Gray Company secured photographs from the owners of a large number of boats equipped with their engines, and have published them in book form, the photographs occupying the left-hand page, while on the right-hand page are letters from the owners stating the size of the outfit and the use to which the boat is put. Each photograph is numbered to correspond with a number on the letter on the opposite page. The book is simply crammed full of photographs in order to make it interesting, and the types of boats shown vary from the tiny hydroplanes or skimmers of 16 or 18 feet, up to the

Olympic, said to be one of the "classiest" boats on the Mississippi. Equipped with a 12-H.P. Gray engine, she is said to make between 16 and 17 miles an hour.

Safeguard Your Vacation Days

Fires in Motor Boats and in summer camps and cottages have ruined many a vacation. Why not be reasonably cautious? Equip your motor boat, your camp or your cottage with PYRENE Fire Extinguishers.

PYRENE Extinguishers will conquer flames in the most highly inflammable materials. They are particularly adapted for motor boat and automobile fires.

They will ferret out the most inaccessible flames—on a motor boat you don't have to lift the bilge boards—and will speedily extinguish the fire.

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PYRENE Extinguishers can be refilled as readily as a kerosene lamp. Their contents will not deteriorate with age. They are always ready for use.

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Eagle Engines are not only the best, but are the most reasonable in price of any two cycle engine in the market. They are carried in stock at the following places:—

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Boston, Mass.	Arthur F. Horner	156 State Street
Brunswick, Ga.	Wright & Gowen	Bay & Oglethorpe Streets
Chicago, Ill.	Robert H. Richter	627 W. Jackson Blvd.
Cleveland, Ohio	Motor Boat & Supply Co.	1411 West 9th Street
Houston, Texas	Barden Elecric & Machinery Co.	109 Main Street
Jacksonville, Fla.	National Boat & Engine Co.	230 West Bay Street
Los Angeles, Cal.	Marine Engine & Supply Co.	121 East 6th Street
Mobile, Alabama	Marine Supply Co.	14 St. Michael Street
New York City	Bruns, Kimball & Co.	132 Liberty Street
New Orleans, La.	Stauffer, Eshleman & Co.	511 Canal Street
Norfolk, Va.	Bell Motor Co.	Plume Street
Philadelphia, Pa.	W. E. Gochenaur	631 Arch Street
Pensacola, Fla.	Pensacola Gas Engine & Supply Co.	713 S. Palafox Street
San Diego, Cal.	Bay Region Machine Works	240 "D" Street
Savannah, Ga.	Osborne-Marlow Co.	129 Congress Street, W.
St. Louis, Mo.	G. C. Marsh	6209 S. Levee
Seattle, Washington	**The Eagle Company**	70 Marion Street
Sioux City, Iowa	Central Machine Works	613 Third St.
Stamford, Conn.	Power Equipment Co.	Flemming's Dock
Gaspe, Quebec	K. J. Carter	
Montreal, Canada	Shea Sales Co.	296 St. James Street
St. John, N. B.	James Elliott Co.	27 Nelson Street
St. John's, N. F.	Angel Engineering Cb.	
Toronto, Canada	Sherman Cooper Co.	1051 Eastern Avenue
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THE EAGLE COMPANY

98 Warren Street - Newark, New Jersey

The Houseboat Lanai

—the 70 footer which has been hailed in Florida as the houseboat marvel of the year in comfort, speed and ability to ascend inland streams. Simply another proof of the advantages of Mathis' specializing on boats of less than 120 feet and of our unequaled facilities and location for such work.

WRITE FOR DETAILS

MATHIS YACHT BUILDING CO.

Builders of the famous shoal houseboats—

COCOPOMELO
EDNADA III
LODONA
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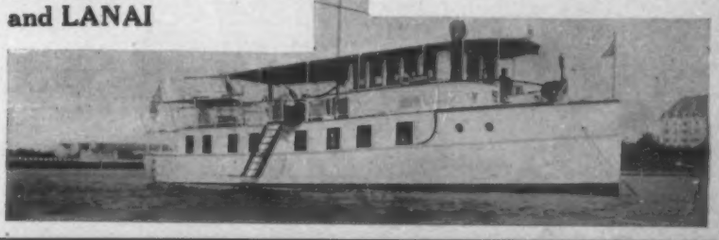
and LANAI

Specialists in 60 to 120-foot cruisers and houseboats

Front & Erie Sts., CAMDEN, N. J.



Consult YACHTING'S Information Department on any of your problems. Its service is absolutely free.

Jewel Electric detachable motor weighing only 30 lbs.

largest size cabin cruiser, and includes everything between the two. The Gray Company considers that the appearance of these outfits constitutes the value of the book, rather than the letters which it contains.

One of the pictures received too late to get in this book, and which we reproduce here, is of a 25-foot speed boat called the Olympic, owned by Mr. C. E. Padgett, of Quincy, Ill. She was built from Faultless stock patterns and is equipped with a 12 H.P., two-cylinder Gray engine with which she makes a speed of between 16 and 17 miles an hour. She is a very classy looking boat, and the local papers give her credit of being one of the finest on the Mississippi River.

A Portable Electric Motor

A new detachable motor for use on canoes and rowboats has recently been perfected and put on the market by the Jewel Electric Company, of 1112 South Michigan Avenue, Chicago, Ill. This motor differs from the other portable motors on the market in that it is operated by electricity furnished by two storage batteries rather than by gasolene. The motor itself weighs only 30 pounds, and can be easily attached to the stern or side of any canoe, rowboat or yacht's tender.

This motor is mounted vertically on a supporting tube, and has a maximum speed of 2500 R.P.M. Two six-volt sixty-ampere-hour storage batteries connected in series supply current for the motor. The motor is direct connected to a vertical transmission shaft about 2 feet above the water-line. The power is transmitted to a pair of special gears somewhat similar to the worm gear type. The circular gears operate in a gear housing below the waterline and change the vertical power transmission to the horizontal propeller shaft.

The rowboat motor is used both as a propelling device and also as a rudder. The slightest change in the angle of the propeller changes the direction of the boat.

At the top of the electric motor is fitted the steering wheel, made of aluminum, and a handle is adjusted to this wheel in such a manner that its position can be changed in a moment by means of two thumb screws.

On top of the steering wheel is mounted the rotary switch. This switch is waterproof and has three speeds. If a lower speed is desired only one six-volt battery need be used.

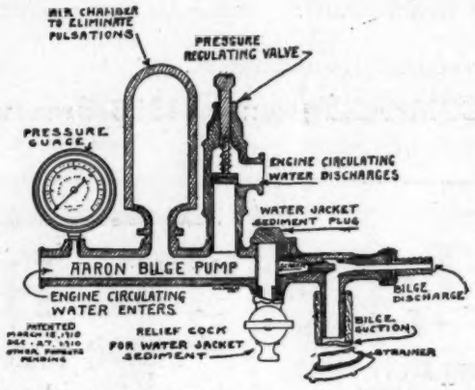
For commercial uses where large heavy boats must be operated a 3-H.P. motor can be used with a larger three-blade propeller.

Every detail of the mechanism is worked out in such a practical manner that the entire device is fool proof, and the number of parts are reduced to a minimum.

An Automatic Bilge Pump

The Aaron Automatic Bilge Pump, built by the Aaron Automatic Bilge Pump Co., of 171 Westminster Street, Providence, R. I., is unique among bilge pumping devices in that it takes no power from the engine, cannot run hot when dry and is always on the job, requiring no split pulleys, lever throws, or other bring-into-action attachments, which rely upon the vigilance of someone who may be too busy at the time to attend to them.

The makers say that one of the great advantages of the Aaron Automatic Bilge Pump lies in the fact that the pump is drawing just as long as the engine runs, that when it ceases to pump bilge it commences to pump air, and consequently any free gasolene vapor that may be aboard the boat and which always sinks to the lowest portion of the bilge.



Sectional view of Aaron Automatic Bilge Pump.

Pinta, a 40-foot gasolene tugboat for Porto Rico. Equipped with a 40-H.P. Sterling engine she is capable of handling a four-masted schooner.

With this pumping device, the entire work is done by the circulating water of the engine after it has cooled the cylinder, thus obviating all belt or gear drives, shaft attachments, and other bulky devices. An exceptional feature of the Aaron Bilge Pump lies in the fact that it is most admirably adapted for keeping clean and dry the hold in fishing and oyster boats and ice barges, as it will first dispose of the water in the bilge and then suck out all the foul air.

The Aaron Pump is built in a variety of sizes, so that whether one's motor be of 2½ or 500 H.P. there is an Aaron Automatic Bilge Pump perfectly adapted to it. When ordering a pump give length of hull of boat, also the make and horsepower of engine, the style of circulating pump and size of outlet pipe on the circulating system.

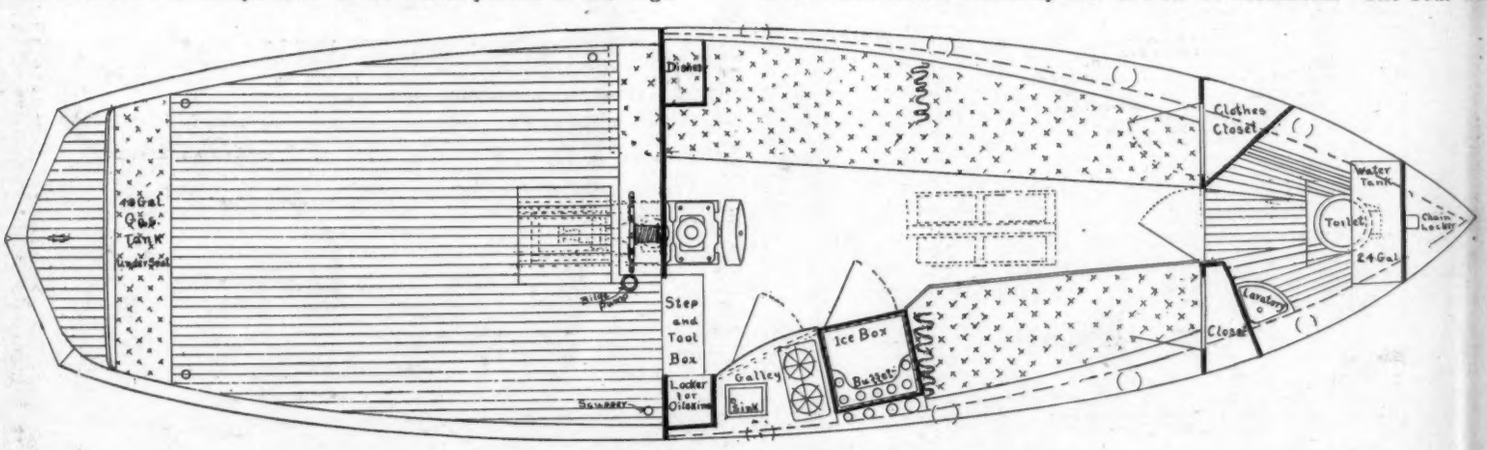
Sterling Engines in Foreign Countries

Porto Rico came to the United States for the first real motor tug ever built at the port of Boston. This is the Pinta, a 40-footer, powerful enough to handle a four-masted schooner under favorable conditions. B. B. Crowninshield was the designer and the R. T. Green Co., of Chelsea, Mass., the builders. This little vessel, a photograph of which we reproduce here, was constructed for the Central Aguirre Company to assist sailing vessels that go to the island for cargoes of sugar.

The Pinta has a 40-H.P. heavy-duty Sterling engine with all controls leading to the steering wheel so that she may be operated by one man. The material employed is especially heavy, and the tug's bottom is sheathed with composition to prevent inroads of the teredo or borer that riddles unprotected planking in the tropics.

The Pinta on her trials logged 10½ miles per hour, and can tank enough gasolene to carry her 300 miles. She was shipped on deck of the steamship Pathfinder to Porto Rico. She makes a fine, able, powerful and economical boat.

A Sterling engine will also power one of the boats entered in the Olympic races at Stockholm, Sweden, in July, the Sterling Engine Company having just shipped a six-cylinder 45-65 H.P. machine to be installed in a 43-foot cruiser owned by Mr. G. Pott of Stockholm. The boat will



Accommodation plan of Dale 30-foot cruiser.

T&C
Waterproof Linen Braided Tiller Rope Containing Bronze Rope Centre

is made of the best grade of flax yarn, which is waterprcofed and contains a bronze rope centre, made of a special analysis. This will outwear any other material as it will not chafe and has a greater wearing surface in passing over the sheaves. It will neither rust, shrink nor stretch.

Made in all sizes.

Fully covered by patent granted December 24, 1901.

TUCKER & CARTER ROPE COMPANY

76 South Street and 167 Maiden Lane **NEW YORK CITY**

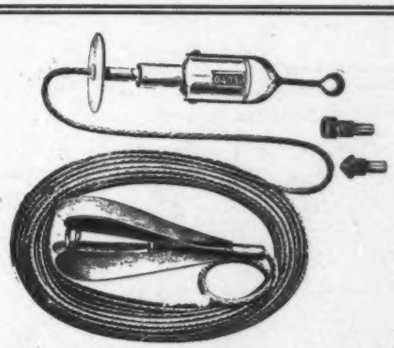
FACTORIES
Tuckertown and New London, North Carolina

OUR LATEST

Durkee's Combination Taffrail Log and Speed Counter

Patent Pending

Always Ready



No Setting Required

This Log is the most compact and accurate small Log on the market, and can also be used to obtain the speed of engine by simply detaching the line thus combining two very useful and necessary instruments for Motor Boats.

PRICE, $7.50

Send 20 cents in stamps for postage on mammoth catalogue

C. D. DURKEE & CO.

2 and 3 South Street **NEW YORK**

Stewart Speedometer

The perfect speed and distance measure—a beauty in appearance, a marvel in accuracy

Speedometers that cost more than the *Stewart* are priced high—not because they are better—but only because they are fewer; the extra price doesn't represent value—it only means a smaller output.

The *Stewart* volume of business is enormous. *Stewart* Speedometers are on four cars out of five.

The *Stewart* is the best speedometer that can be made, and it is sold at a minimum price. Other makers cannot supply a comparable instrument at double the price.

An absolute necessity on every car

***Stewart* Speedometers save you from arrest and accidents—keep track of your season mileage—save you money on tire adjustments. Enable you to follow guide-book mileage when touring, and help you in many other ways to enjoy your car and operate it economically.**

GUARANTEED FOR FIVE YEARS

Magnetic principle, employed in 85 per cent of the speedometers in use. Slow moving parts, hardened and polished—no wear. Ball and jewel bearings; 100,000-mile season odometer; 100-mile trip register, can be set back to any tenth of a mile. Unbreakable flexible shaft, drop forged swivel joint; noiseless road wheel gears, an exclusive feature of the STEWART Speedometer.

Speedometers, $15 to $30

Rim Wind, Clock Combinations, $45 to $70

Write for Catalogue

Stewart & Clark Manufacturing Co.

1921 Diversey Boulevard, Chicago

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Los Angeles Minneapolis Indianapolis London Paris

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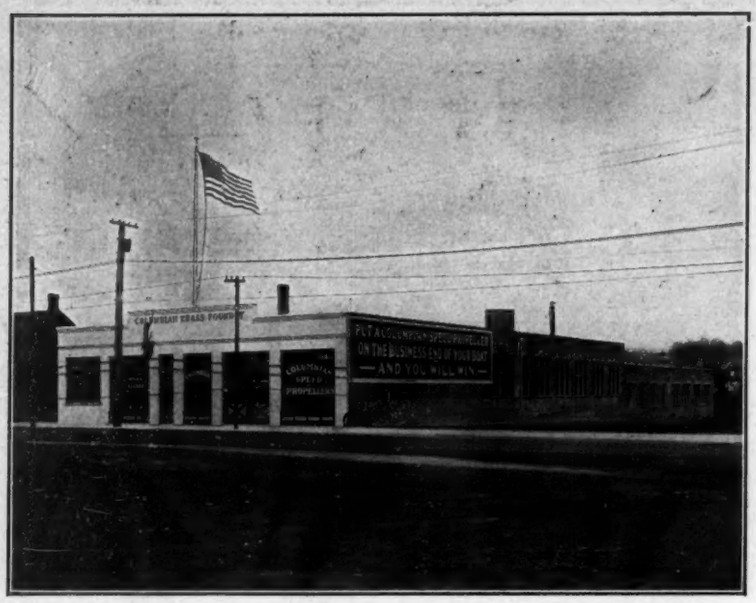


New factory where Columbian speed propellers are made.

race over a 60 knot course, 40 knots of which will be over the open sea.

A New Bronze Non-Fouling Paint

One of the principal things that the owner of a power or sail driven craft has to contend with is that of keeping the bottom of the boat clean. It is surprising how quickly a boat will foul up after launching, though covered with a fresh coat of paint, and this fact led Mr. Robert Henke, Jr., to spend many years in perfecting a paint that would be absolutely non-fouling. The result of these labors was to produce the Henke Marine Bronze Paint, which the maker claims will absolutely prevent barnacles, grass and all marine growth, and is also a sure preventative of the toredo or borer which is so detrimental to wooden boats.

This paint is made in two colors, green and copper, and is put up for the use of yachtsmen in various sized cans, holding from one quart to one gallon each. Mr. Henke claims that his paint is equally good for wood or bronze bottoms and gives a hard, smooth and slippery surface, at the same time preserving the fine green finish which is so much desired by boat owners. It is an ideal paint for racing bottoms where the smoothest and hardest finish must be had. It is sold by the Henke Manufacturing Company, 135 Bowery, New York City. If your dealer doesn't carry it write direct to the manufacturers who will tell you where it may be procured in your locality.

A Fine 30-Foot Raised Deck Cruiser

The William L. Dale Boat Works, of 123 River Avenue, Bronx, New York City, are building a stock raised-deck cabin cruiser 30 feet in length which is not only a very handsome boat but contains accommodations equal to most 35-footers. In turning out this boat it has been their object to build the most complete 30-footer ever put on the market. The dimensions of this boat are: Length overall 30 feet, beam 8 feet 4 inches, draft 2 feet 6 inches. It is built with oak frames 1½"x1½", and planked with ⅞-inch cedar.

The accommodation plan shown on page 530 gives a good idea of her excellent interior layout.

A Deep Water Yarn

The Stamford Foundry Company, of Stamford, Conn., makers of the Shipmate ranges, have for several years been noted for the attractive booklets which they get out to advertise among boat owners their Shipmate range. Last year "Around the Galley Fire" was one of the best books that it has ever been our good fortune to see, and this year "A Deep Water Yarn" is published, being a sea story by Frederick William Wallace of unusual interest. Mr. Wallace is already known to the readers of YACHTING by the stories and poems of the sea that have appeared in this magazine, among them being "Yankee Clippers and Yankee Skippers," "Running the Easting Down," and "The Song of an Ocean Tramp."

A New Factory for Columbian Propellers

The accompanying illustration shows the new factory recently erected by the Columbian Brass Foundry, of Freeport, L. I., which they have occupied since March. The building is 220 feet long by 64 feet wide, and contains every modern device for the manufacture of bronze propellers and other marine accessories. In the rear of the main building is the foundry, 50 feet by 64 feet with a monitor roof for light and ventilation. In the foundry is a modern coke tilting furnace with a capacity for melting 2,700 pounds of metal per day. A battery of pit furnaces brings the total daily melting capacity up to 6,000 pounds. Every facility is employed here for manufacturing the best manganese bronze castings. Bertha Spelter, the best grade obtainable, is used, together with the best ingot copper. No scrap metal whatever is used in the mixture.

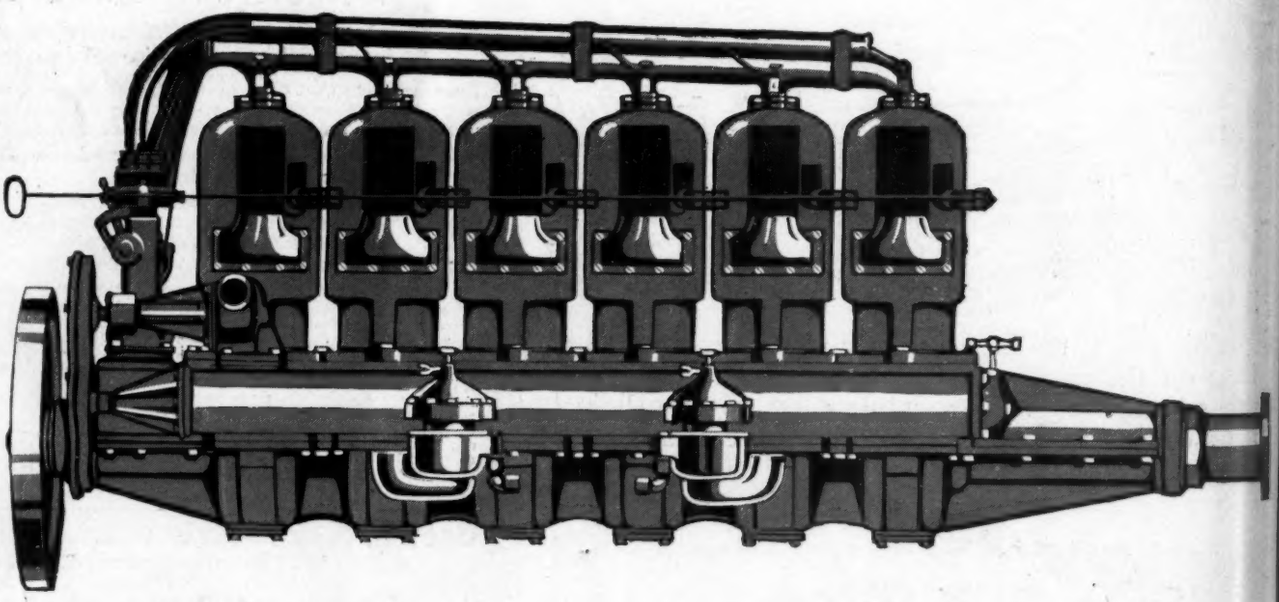
The factory further comprises a cleaning and chipping-room where the gates are sawed off by automatic sawing machines, and the castings ground off ready for polishing; a large polishing-room where the propellers are accurately polished and buffed by experts; a machine shop where the boring of the wheels and all other machine operations are performed; a stock-room where the large stock of finished propellers, universal struts, rudders, outboard rudders, tobin bronze shafting, stuffing boxes, etc., are kept; and the packing and shipping-room.

Adjoining the foundry is a large pattern storage-room and pattern shop which contains probably the largest assortment of propeller patterns in any one room in the country. This company claims to be the only one having a large number of different styles of propellers, and a large number of patterns for different pitches of each diameter in each different style. This enables them to supply any type or size of propeller that may be required for any particular boat.

The New Roberts Racing Motor

With the interest in speed boats and fast craft of all kinds so keen, we feel that our readers will be interested in learning of the development of power plants for these craft. Small boats seem to be so much more popular for the average speed boat "bug," that you will now find from twenty-five to forty 20- and 26-footers, to every 40-footer. For this reason it is necessary to make an extremely light motor for boats of this size.

A number of manufacturers have been comparatively successful in reducing the weights of their power plants to a reasonably low figure by the selection of a higher grade of material and improved design, such as copper water jackets in place of integrally cast cast-iron cylinders, cylinders cast *en bloc*, with copper water jackets, special steels and gray irons where thinner metal walls may be used without seriously affecting the serv-



New Roberts "Big Six" motor developing 125-H.P. at 1200 r.p.m., weighing only 400 lbs.

QUICK DELIVERY

Is a Sure Result of

Central Location, Complete Stocks
Thorough Organization* and a *Modern Plant

This is the combination that enables us to reach promptly more boating centers than any other American supply house. We can save you hours, days and sometimes weeks of annoying and expensive delay.

Send 20c to cover postage on our ***1912 550-page MARINE SUPPLY CATALOGUE No. 101.*** Full of interesting information and attractive prices. Your 20c will be refunded on your first order.

CUR NEW PLANT

GEO·B·CARPENTER & CO.

430-440 WELLS STREET

CHICAGO, THE GREAT CENTRAL MARKET

DON'T LIFT ANCHOR

Until 3-in-One Oil is aboard. You'll need it a hundred and one times for a hundred and one uses before you make port.

3-in-One is the best, the only preparation on land or sea that actually will prevent verdigris or tarnish on brass parts and trimmings. It also prevents rust forming on all metal or nickeled surfaces anywhere, under any climate or conditions. 3-in-One sinks right into the very pores of the metal, forming a thin, imperceptible coating that defies wind, weather and even the corrosive salty spray of ocean waves.

Try it for Oiling Motors, Fans, all kinds of Electrical Machinery, Phonographs, Guns, Revolvers, and every kind of tool you'll need on sea or land.

Try for Cleaning and Polishing all veneered and varnished surfaces.

Three Sizes. 8-oz. Bottle 50 Cts. 3-oz. 25 Cts. Trial Size, 10 Cts. All Stores.

A SAMPLE IS YOURS FREE!

Just write us right now and we'll send you generous sample and 3-in-One Dictionary *postage prepaid.*

3-IN-ONE OIL CO.

27 Broadway

NEW YORK CITY

EVERY Cup Defender and practically all the winning yachts of the country since 1898 have used Lowell Duck.

Since 1898 we have been making sail cloth called

TRADE MARK

LOWELL DUCK

REG. U.S. PAT. OFF.

It is used by the Cup defenders, the 70's and 65-footers, the racing schooners, the 30's, 25's, Q class, 15-footers, the Sonder-class boats, and by the great majority of racing and winning yachts. Be sure to get Lowell Duck. It is made in two qualities.

REGULAR FOR CRUISING SPECIAL FOR RACING

BOSTON YARN CO., Boston, Mass.

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Consult YACHTING'S Information Department on any of your problems. Its service is absolutely free.

Since the decision rendered by the United States Supreme Court, it has been decided by the Monks hereafter to bottle

CHARTREUSE

(Liqueur Pères Chartreux)

both being identically the same article, under a combination label representing the old and the new labels, and in the old style of bottle bearing the Monks' familiar insignia, as shown in this advertisement.

According to the decision of the U. S. Supreme Court, handed down by Mr. Justice Hughes on May 29th, 1911, no one but the Carthusian Monks (Pères Chartreux) is entitled to use the word CHARTREUSE as the name or designation of a Liqueur, so their victory in the suit against the Cusenier Company, representing M. Henri Lecouturier, the Liquidator appointed by the French Courts, and his successors, the Compagnie Fermiere de la Grande Chartreuse, is complete.

The Carthusian Monks (Pères Chartreux), and they alone, have the formula or recipe of the secret process employed in the manufacture of the genuine Chartreuse, and have never parted with it. There is no genuine Chartreuse save that made by them at Tarragona, Spain.

At first-class Wine Merchants, Grocers, Hotels, Cafés.
Bätjer & Co., 45 Broadway, New York, N. Y.
Sole Agents for United States.

BONNEY DORIES, $59

16 feet x 5 feet beam, complete rig.
18 feet x 5 feet beam, $65 and $70.
19 feet x 5 feet 6 inches, $90, decked, $115.
21 feet x 5 feet 8 inches beam, decked, $140.
Send for circular. Order early for delivery.
JOHN C. G. BONNEY
21 Platt Street New York

VAN BLERCK MOTORS
SPEED AND MEDIUM DUTY
High speed types, 4 and 6 cylinders; 40 to 80 H. P.
Medium duty types, 2 4 and 6 cylinders; 12 to 50 H. P.
Catalog on request
Van Blerck Motor Co., 35 Hibbard Ave., Detroit, Mich.

WILSON & SILSBY
SAIL MAKERS
ROWE'S WHARF, BOSTON, MASS.
Dealers in Fine Yacht Duck, Rope and Fittings

WILLIAM H. GRIFFIN
SAIL MAKER
Special attention given to Yacht sails of all kinds, canvas work of every description. Estimates cheerfully given.
Office and Loft:
CITY ISLAND, NEW YORK

MARYLAND'S BEST WHISKEY

HUNTER BALTIMORE RYE

Rests not its fame on any local repute. Its fame is world-wide. 50 years of scrupulous care has made it
THE "FINEST PRODUCT OF THE STILL"

Sold at all first-class cafes and by jobbers.
WM. LANAHAN & SON, Baltimore, Md.

iceability of the product, and changes of like nature.

These weight reductions have been very important in the development of the present day racing engine as compared with the older types in which a large portion of the power of the motor was used in overcoming the inertia of the engine mass. Thanks to some of the metallurgists our manufacturers are now in a position to make certain substitutions which in no way affect the serviceability of the motor, and substantially lighten the finished product.

For some years aluminum alloy bases have been employed, an alloy a trifle lighter than aluminum but having more than the tensile strength of cast iron. This substitution, however, does not lessen the weight of the cylinders. This same alloy, or a similar, has also been used with more or less success in the construction of the gasolene motor cylinders. In such cases, it was found necessary to use a cast-iron sleeve for the piston travel. There have been a number of such motors built which have proved very successful, but this construction does not positively eliminate the possibilities of the sleeve working loose from its seat.

The advent of the aeroplane has undoubtedly done more to bring about the production of light weight gasolene engines than any other thing. For such work, weight elimination is even more important than in speed boats, but it is also true that a boat making 30 miles an hour with an engine mass of 1200 pounds, will make better time with an engine mass of only half this weight.

The Roberts Motor Company, of Sandusky, Ohio, are one of the American pioneers in the aeroplane motor field. The success of their motor is remarkable, and it is to-day one of the lightest on the market. With this experience it is only natural that they should be in an unusually good position to build an extreme light-weight marine racing engine. Their marine motor is well known in most boating circles, but their new light-weight marine types have not been particularly conspicuous for the reason that they have not built a motor of more than 75 H. P. until recently.

The accompanying illustration shows the Big Six model, six-cyl. 5½ x 6 motor, which develops 125 brake H. P. at 1200 r.p.m. The weight is only 400 lbs., and it is interesting to see the means by which such an extreme weight reduction has been accomplished.

This motor is almost entirely built of aluminum alloys. The crank-cases are made of Magnalium, an aluminum alloy with almost twice the tensile strength of cast iron and lighter than aluminum. This is the alloy before referred to as having been used in the construction of gasolene motors for some time. The cylinders, with water jackets cast integral, are built of a still different aluminum alloy which is of approximately the same weight as aluminum, but which shows over twice the tensile strength of cast iron. These cylinders do not have a cast-iron sleeve for the piston travel. In this way the cylinder is as light as it can possibly be made. The Roberts Motor Co., say that this alloy withstands the wear of the piston travel as well as any grade of cast iron, and in fact, the longer the motor is run the smoother the interior surface becomes.

There has heretofore been some misgivings regarding the serviceability of this metal for cylinder castings, but that this doubt has been dispelled is evidenced by the large number of aeroplane motors, and a number of marine motors, built by the Roberts Motor Company that have been giving satisfactory service for more than 18 months.

In addition to the weight reduction procured through the use of Magnalium and a special cylinder alloy which the Roberts Motor Company have termed "Aerolite," a rather peculiar, yet successful design has contributed greatly to the

(*Continued on page* 540)

A Van Load of Fittings

(*Continued from page* 504)

going out. The cheapest binnacle is the wooden box and brass lamp, not suitable for the open cockpit in thick weather. The No. 2 brass bin-

HENKE MARINE BRONZE
TRADE MARK

The Great Modern Boat Bottom Paint

ANTI-FOULING NOT ONLY IN NAME BUT IN REALITY

WHY?

Why be troubled with barnacles and grass?
Why paint your boat bottom more than once a season?
Why scrape and burn laboriously?
Why suffer expenses and annoyances of these troubles?
Why hinder the speed of your boat?
Why use paint that peels off?
Why wait two or three days for the paint to dry?

With HENKE MARINE BRONZE on your boat bottom all this is unnecessary. It is just what you have been wishing for and waiting for. It cannot foul up. It is now at your disposal.

Put in on your boat. You will be astonished at the result. It makes a hard, smooth, fast surface with a metallic finish. Always fresh because it is mixed only when the patented can is opened.

HENKE MARINE BRONZE IS THE GREATEST PREVENTATIVE OF THE TEREDO OR SHIPWORM. For wood, bronze and copper bottoms. Made in two colors—green and copper. GUARANTEED ABSOLUTELY FOR ONE FULL SEASON. Sold by all reliable dealers. If not he can get it for you or write direct to us:

WRITE FOR BOOKLET AND COLOR CARD

HENKE MANUFACTURING CO., 135 Bowery, New York City

Steering Gears
and Marine Fittings

We designed and built the Meteor Gear for EMPEROR WILLIAM—YACHT METEOR.

His Majesty KING GEORGE V—BRITANNIA.

YACHT ETOILE FILANTE and the celebrated YACHT ATLANTIC, winner of the great OCEAN RACE, have been fitted with our gears.

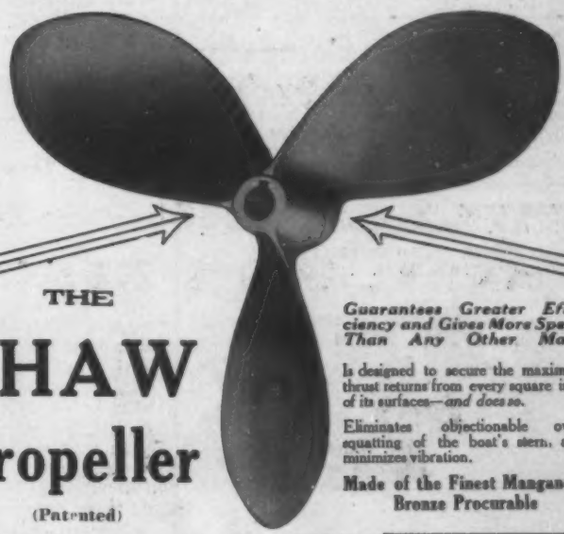
AND MANY OTHERS

We trust we may be pardoned the pride in mentioning the above facts, believing that it is the result of over **fifty years'** conscientious efforts to produce the BEST MACHINERY in our line.

Edson Manufacturing Co.

Established Eighteen Hundred and Fifty-nine

260 ATLANTIC AVENUE, BOSTON, MASS.



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SHAW Propeller

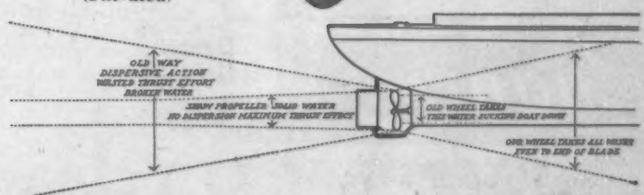
(Patented)

Guarantees Greater Efficiency and Gives More Speed Than Any Other Make

Is designed to secure the maximum thrust returns from every square inch of its surfaces—*and does so.*

Eliminates objectionable overequatting of the boat's stern, and minimizes vibration.

Made of the Finest Manganese Bronze Procurable



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Prices and further particulars from

SHAW PROPELLER CO., 156 State Street, BOSTON, MASS.

35-40 *H.P. 3 Cylinder*
Extreme High Speed Vim.

The VIM
The Motor that can't back-fire

If you are looking for the most economical and most efficient engine for your boat, you will do well to investigate the Vim.

Doubtless you can make the investigation in your home waters, for the Vim is in service in all parts of the world.

The Vim is the result of many years' experience and improvement.

It is the only engine that has a backfiring device that is reliable at all times.

Through its sturdiness, simplicity and reliability, the Vim has won a high position in the opinions of motor boat owners.

We urge you to make your investigation as early as possible, as we feel sure of the results and know that the demand for Vim engines will be greater than ever this season.

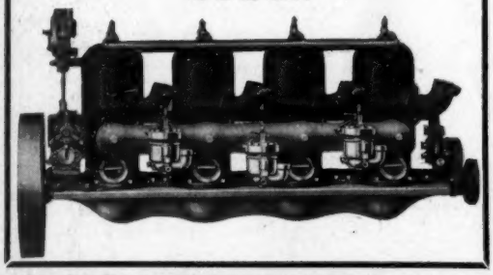
Our new catalog will be mailed upon request.

The Vim Motor Company
22 Water Street, Sandusky, Ohio

Representatives: Northwestern New York, Connecticut and Northwestern New Jersey, Otto Gas Engine Works, 136-138 Liberty St., New York; Portland, Maine, G. D. Thorndyke Machine Co.

STANDARD TYPE 3 to 36 H. P. — **HEAVY TYPE** 3½ to 18 H. P.

EXTREME HIGH SPEED TYPE 13 to 55 H. P.



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Without a doubt the toughest and most durable spar finish made
STANDS ROUGH WEATHER
BOSTON VARNISH COMPANY, Everett Station, BOSTON

1912 Auto Craft Catalog

Get it now.

GIVES illustrations, complete specifications and prices of all our models, including Cruisers, Commercial Launches, Runabouts, Family Launches, Canoes, Rowboats, etc.

THE CLEVELAND AUTO BOAT MFG. CO.
Dealers in all large cities. 1053 River Av., Cleveland

nacle for 3-inch liquid compass or 2¾-inch dory compass will take a 6½-inch box. It has one brass lamp and will cost about $7 or $8. There is also a metal, japanned lifeboat binnacle which is very good and will stand a lot of "weather"; also binnacles fitted with electric lamps which are very handy.

The compass is not of surprising value without a chart, of which "fittin'" you can own quite a collection at 50c. per, from the U. S. Coast and Geodetic Survey. They will send you gratis a book containing diagrams of chart numbers covering the entire Atlantic, Pacific and Gulf Coast. These should be kept in a tin chart case to keep them dry—price $1.50. With the right chart and the lubber's line of your compass set true fore and aft, you can usually manage to arrive somewhere on the broadside of the Americas if the gasolene holds out.

An infernally useful fittin', not appreciated much until immediately after launching, is a bilge pump. Some sort of a fixed affair tapping the lowest point in the bilge is far preferable to that small doubleback-action, stick-fast brass property of the Evil One, commonly sold to innocent motor boatists as a bilge pump. The latter usually sticks abominably if the least grit gets in it, and you sigh for the good old leather-flap bilge pump that used to adorn the centerboard trunk and would pump chips, oyster shells, beer bottles and bilge water combined so long as you ran your end of it. So don't just leave out the bilge pump when you are putting in permanent fittings, trusting to the portable hand affair, but buy or build one in. A 2-inch pump, galvanized iron, 24 inches long with leather plunger, will cost you about $2.00.

The Work-Easy hand bilge pump can be bought from $1.75 up, but the boat owner would do well to install one of the many reliable power bilge pumps now on the market. There are many varieties of these, worked in various ways. The principal method of operating is by means of contact with the flywheel or with a pump working on an eccentric attached to the propeller shaft. There is also a rotary hand bilge pump which is very effective, and can be placed in the cockpit where it is easy to get it. There is also an automatic pump that is operated by the water circulating system of the engine. By all means get a satisfactory pumping outfit.

The Heavy Oil Engine for Large Auxiliaries

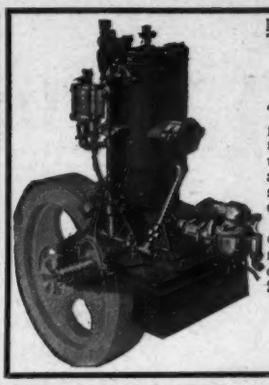
(*Continued from* 491)

brake horse-power, making 300 revolutions per minute was originally intended simply for use during a calm and in entering and leaving harbors, but has, in spite of its low power, been in almost constant use while the vessel is under way ever since it was installed.

It is well known that great attention has been paid in Germany to the question of motor sailing vessels. Coasting schooners and even larger ships in the foreign trade, which have been provided with auxiliary power, have been able to compete successfully with steamers. It is pointed out that the adoption of oil motors is a double advantage as there is a saving both in cost of operation and in the space required within the hull. The accompanying drawing shows the profile and deck plan of a German three-masted auxiliary schooner of 500 tons gross register, in which there has been installed an oil motor of 140 indicated horse power. The small amount of space taken up by this power plant is quite remarkable in view of the fact that it is capable of giving the ship a speed of 7 knots in smooth water when loaded with cargo.

Large gasolene engines have already been used with considerable success in good-sized coasting schooners and fishermen in this country, but the heavy oil engine seems likely to prove an even superior means of motive power, because it is less expensive to operate and is absolutely safe.

It has, however, not yet been found practicable to build low-powered models for small boats, as that field is already so efficiently covered by the gasolene motor.



MEN WHO LIVE ON THE WATER CHOOSE **ROYAL ENGINE**

They know which engine gives the most efficient service, that can stand up best against the wear and tear of long runs at sea and does not break down.

Don't you think the choice of these men should help you to decide? Built in sizes from 2½ H.P. to 15 H.P.

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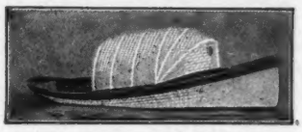
The Royal Engine Co.
1045 Broad St.
Bridgeport, Conn.

DAVIS DINKS

The Ideal Tenders—Don't be without one—Built for Power or Rowing
Write for Catalogue "Y"
THE DAVIS BOAT WORKS CO.
Foot Washington St. Sandusky, Ohio, U.S.A.



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CUT AND MADE TO FIT YOUR BOAT

Monarch Sliding Spray Hoods can be raised or lowered in ten seconds. Made of standard Government Army Khaki, absolutely waterproof and very durable. Complete with specially tempered brass tubing and all parts necessary to set up.

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Acme Flossfilled cushions and pillows conforming to the new law. Pneumatic Mattresses and Cushions. Government Inspected Life Preservers, Ring Buoys, Rope and Canvas Fenders, etc.

All our products are quality articles but, value considered, the prices are low. Catalog L free.

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BIDDLE MONEL METAL PROPELLERS

Non-Corrodible. Stronger than Bronze. Shine like Silver.
Biddle Propellers are designed by experienced naval architects. Write for details on propellers and hardware.
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are made in all sizes, for all styles of motor boats. Just turn a switch and the light is there. Send for our free book today.

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SAVE MONEY — The Famous Michigan — SAVE MONEY

Speed Propeller Wheels, Reverse Gears and Marine Hardware are used on some of the most up-to-date and fastest boats in the world. Our prices are the lowest; our goods the best; satisfaction guaranteed; immense stock; prompt shipment; save money. Send for our 1912 free catalogue to-day.

MICHIGAN WHEEL CO.
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Save $150.00 by buying this FULLY GUARANTEED QUALITY BOAT

We make a leader of her at $275.00

This exceptional boat value is making a big reputation for us

THE RICE 20 Ft. SPECIAL

$275.00

Built and sold on the usual basis this boat would cost $425.00

We are simply making a leader of her, building several hundred, and selling at a *very close margin* 20 x 4½ with our own fully guaranteed 4 H. P. engine. The best oak, white cedar, spruce, mahogany and cypress used in construction. Bronze rudder post, polished brass deck fittings, copper gasoline tank, etc., etc. **IMMEDIATE DELIVERY GUARANTEED**

Write for full details if you want an exceptional value.

We are offering a still bigger bargain in our 20-foot Fast Runabout, 8-10 H. P., double cylinder jump spark engine, for $375.00. Speed 12 miles an hour

BOOK DESCRIBING BOTH SENT FREE ON REQUEST

RICE BROTHERS COMPANY (Dept. J), **East Boothbay, Maine, U.S.A.**

WHY ROW

WHY tire yourself rowing when one of our detachable row boat motors can be clamped with two thumb screws to the back of any rowboat, anywhere, in a minute? Motor develops 1½ H. P. So light you can carry it like a satchel, so compact you can put it under your auto seat. Steers by swinging propeller. So good we guarantee satisfaction or refund your money.

EVINRUDE DETACHABLE ROW BOAT **MOTOR**

is not a plaything or an experiment. It is a reliable practical rowboat motor, so simple a child can run it. Over 3,500 in use. Runs 40 miles on a gallon of gasoline. Made for both fresh and salt water. Czarina of Russia has four on her own private yacht.

Prices, catalogue and list of satisfied owners sent on request.

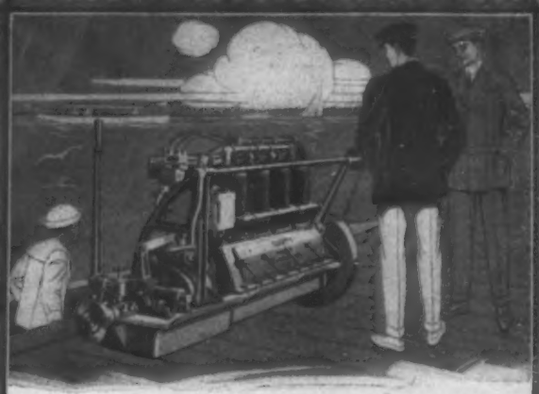
WEIGHS :: BUT :: 50 LBS.

SPEED 8 MILES AN HOUR

EVINRUDE MOTOR CO.
322 Reed Street, MILWAUKEE, WIS.

New York Salesroom:
260 WEST BROADWAY, Dept. G. G.

Sole For. Rep., Melchior, Armstrong & Dessau
116 BROAD STREET, NEW YORK



YES sir! *That* motor will do the business.

The Scripps has the best stuff in it that can be bought.

It will make you a compact, strong power plant—one upon which you can always rely.

It's a *complete, unit marine engine and gear*—well designed, accurately constructed and thoroughly accessible.

I know several men who are *changing to Scripps equipment* this year. They are wise."

THE SCRIPPS COMPLETE **MARINE POWER PLANT**

"The motor that really did master Niagara."

Scripps Motors have made wonderful records in all parts of the world. They have won medals and diplomas at all the principal European expositions.

Perfect record in the recent Scripps Reliability Cruise.

The Scripps was the motor used by Capt. Klaus Larsen in his 15-foot power boat with which he successfully navigated the Niagara Whirlpool and Rapids.

Write for catalog describing our entire line of complete Power Plants from one to six cylinders, 4 to 100 H.P

SCRIPPS MOTOR COMPANY
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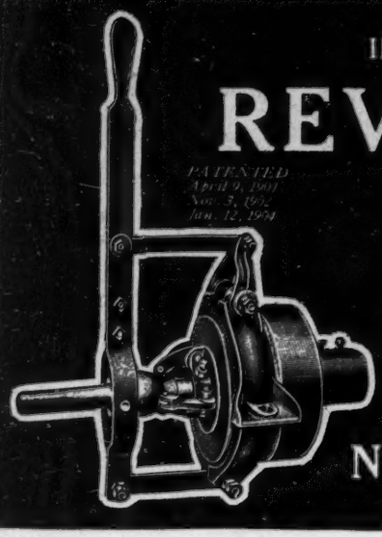
Scripps Motors are Carried in Stock in New York by BOWLER, HOLMES & HECKER CO. 143 Liberty St., New York City.

THE IMPROVED BALL
REVERSE GEAR
for MOTOR BOATS
Made only of
HARDENED STEEL SPUR GEARS
MOST RELIABLE — HIGHEST GRADE — EASIEST TO INSTALL
Four sizes carried in stock
Send for Catalog
NEW YORK GEAR WORKS
59 Milton Street, BROOKLYN, N. Y.



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Mattresses, Pillows and
Upholstery
Manufactured Since 1845 by
M. W. FOGG
No Catalogues
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Write for our 1912 Catalogue of
SPRAY-HOODS AND CANOPIES,
which also contains interesting information on
SAILS, AWNINGS, COVERS,
HAMMOCKS, ETC.
This book is of value to every boat owner
Write today
G. W. ROBINSON & CO.
SAILMAKERS
City Island New York City

High Grade Heavy Weight Tanks
For Gasolene, Water and Air of any shape or dimensions desired for any pressure. We make only work of merit.
"Light Competition Work Not Wanted."
Galvanizing of all kinds of marine work.
L. O. KOVEN & BROTHER
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CHAIRS
It will pay you to know about Wicker-Kraft Chairs
Ask about the Luders Type Life Belt Chair that is a
LIFE-PRESERVER
WICKER-KRAFT COMPANY
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PALMER MOTORS AND LAUNCHES
2 AND 4 CYCLE
Catalogue M Free of Motors.
Catalogue B Free of Boats.
6 H P 2 CYLINDER MOTOR $98.00
ENGINES FROM 2 TO 40 H.P. IN STOCK
PALMER BROS. Cos Cob, Conn.

Catch More Fish
Don't waste time with dead minnows. Get a Cream City Minnow Bucket and keep your minnows strong and lively. You'll double your catch and make the day's fishing much more enjoyable.
Cream City Minnow Buckets are the best live-bait carriers made. Come in many styles—with galvanized inset—sunk ice-pan in top—hinged, self-locking perforated tops—handsome, strong, serviceable and good for years of wear. If your dealer doesn't sell the Cream City line—write us for free catalog—but don't take a substitute.
Cream City MINNOW BUCKETS
GEUDER, PAESCHKE & FREY CO.
108 St. Paul Ave., Milwaukee, U. S. A.
(7-32)

Rushed with Orders

The Vim Motor Company, of Sandusky, Ohio, manufacturers of the well-known Vim motor, are rushed with orders due, in a measure, to their large export business, recent shipments having been made to Austria, England, Finland, Java, Alaska, Africa, Australia and Mexico. They say that business, so far this year, has also increased over 100 per cent in this country and Canada, due perhaps to the many new and advantageous features embodied in the 1912 model Vim. The positive non-backfiring device and the non-adjusting carburetor are very popular, and have not only simplified the motor, but, further, have increased its efficiency.

The Vim Motor Company is having success with its 2-cyl., heavy-duty 12-H.P. engine equipppd with double ignition (Bosch magneto and battery system) and Paragon gear, mounted on one base in a unit power plant. This motor has been very popular, especially among Lake Erie fishermen, and during the month of April 24 of these outfits were contracted for by the large fish companies on the south shore of the Lake which have used Vim motors for the last eight years.

Electrene Fire Extinguisher Approved by Government Inspectors

Among the new fire extinguishing appliances for motorboats is the Electrene Extinguisher. In a recent circular put out by the U. S. Steamboat Inspection Service a number of extinguishers were approved by name. Since this circular was issued, or on February 12, 1912, the Board of Supervising Inspectors formally approved of the Electrene Extinguisher for use on motorboats as meeting all the requirements for putting out burning gasolene.

Electrene is the product of long experience with hand fire apparatus, and the makers, The Electrene Co., 17 Battery Place, N. Y., guarantee it to do what is required of it. It is strong and durable and each extinguisher is carefully inspected before shipment.

It requires no pumping except for refilling. To operate, it is only necessary to turn the nozzle and it will throw a steady stream 30 to 40 feet. This stream can be directed accurately and one hand of the operator is free to move obstructions, etc.

The fluid is very effective and will extinguish with surprising quickness highly inflammable fires of gasolene, carbide, oils and electric arcs. It has no tendency to spread such fires.

An Old Firm of Sailmakers

John Curtin & Co., Inc., of 4 South Street, New York City, have been known by several generations of yachtsmen as makers not only of sails but of all kinds of canvas goods for marine use, from spray hoods to sails for a full-rigged ship. For the last ten years the business has been under the direct supervision of Mr. George R. Burrows, and during that time he has become well known to a large circle of yachtsmen. It is largely due to Mr. Burrows' personality that the firm has attained its present standing among those who use sails, either for pleasure or commercial purposes. Mr. William Fuller has recently been made Secretary of the company and Mr. Frederick Benschine Treasurer.

A Correction

In an article on the Trimount Rotary Power Co.'s air whistle outfit which appeared in the Interest to Skipper notes in the May issue of YACHTING, the address of the manufacturer of these rotary whistles and pumps was given as 148 Pearl St., Buffalo, N. Y. This was a typographical error, and should have been 148 Pearl St., Boston, Mass. At the latter address the Trimount Rotary Power Co., carry a full line of their excellent rotary air whistle and fog horn outfits, as well as their rotary hand bilge pump, and any inquiries for catalogs and prices will be promptly taken care of by this company.

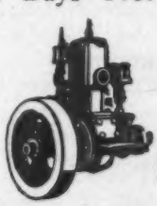
"AMERICAN SPECIAL"

16FT. 2HP $100. COMPLETE EQUIPMENT

SEND for all information about this classy Motor Boat. Well designed and perfectly constructed. Finest materials. Nothing better. Fitted with our 2 h.p. American Motor—there is no better marine engine made. WRITE FOR SPECIAL INTRODUCTORY OFFER. DO IT NOW—TODAY. If you have boat and want engine only, ask for our FREE Catalogue of American Motors—all sizes from 2 to 20 h.p.

Guaranteed for Life. The American is simple in design, is easy to understand and operate and is free from all useless and troublesome parts. It is made interchangeable throughout, so that in case of accident to any part it can be easily replaced with a new one. These are only a few of the many good features of the AMERICAN—if you want to know ALL about it, get our catalog.

The AMERICAN is sold on Thirty Days' Free Trial, and is Guaranteed for life. Any parts that may prove defective will be replaced at any time, free of charge.



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American Engine Co.

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Sails That Win

AWNINGS and COVERS that fit and keep the water out.

We make everything, made of canvas, for motor and sail-boats and make it well

You will find our prices right

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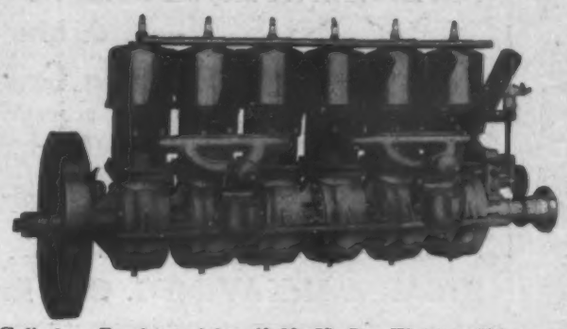
4 South Street New York City



6-Cylinder, Featherweight, 60-90 H. P. Weight, 300 pounds

¶ This is the proper engine for a hydroplane or a racer.

¶ We make thirty different kinds and sizes for all sorts of pleasure craft—from three horse-power to ninety horse-power. May we send catalog and quotations?

Elbridge Engine Company

22 Culver Road, Rochester, N.Y.

Paint the Bottom of a Deep Sea Cruising Yacht or a Fast Racing Launch with

→S & M←

Marblehead Anti-Fouling, Green, White or Bronze

SMOOTH—DURABLE—SLIPPERY—HANDSOME

THE MOST POWERFUL PREVENTIVE OF MARINE GROWTH PRODUCED

For WOOD or STEEL. It is NOT a Copper Paint and IS Non-Corrosive.
FOR TROPICAL WATERS it is the only substitute for Copper Sheathing.

ABSOLUTELY GUARANTEED

For Topsides—YACHT WHITE and VARNISH BLACK. Deck Paints of all colors.

STEARNS-McKAY MFG. CO., Marblehead, Mass., U. S. A.

Boats of Quality

Write for Booklet

MILTON BOAT WKS., RYE, N. Y.

Designers and Builders

A LEAKY BOAT IS PRETTY BAD BUT A LEAKY TANK IS WORSE.

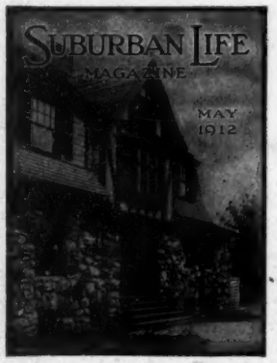
New York Office, Hudson Terminal Bldg., 30 Church St.

VACATION AND THE SUMMER HOME

Will soon take our interests away from the routine of winter life. The coming issues of SUBURBAN LIFE MAGAZINE will contain many suggestions for novel vacations that will **appeal to those who like something different.**

If you already have a summer home the early summer numbers of this magazine will be very helpful to you in **making your house and grounds more comfortable and beautiful,** or if you contemplate building a home you should not miss the plans and suggestions contained in the **May Small House Number** and as garden guides you surely want the **Big Double Numbers** of the Spring.

To those who are not now subscribers to SUBURBAN LIFE MAGAZINE, we extend this opportunity to obtain the six big issues described below at a special trial price.



The actual size of the SUBURBAN LIFE MAGAZINE page is 10¼ inches wide by 14 inches long. Its covers, in full colors, are considered as perfection in color printing. Its photographic illustrations are in keeping with the high-class character of the reading matter. As one of our readers writes: "Harmonious throughout, it is the very epitome of art."

Six Months' Trial Subscription FOR $1.00

The regular price of SUBURBAN LIFE MAGAZINE is 25 cents a copy and $3.00 a year, but to all new subscribers who will cut off the coupon below and **send it to us with $1.00,** we will send SUBURBAN LIFE MAGAZINE for **six months** beginning with the **March Annual Garden Number.** This number is devoted almost exclusively to amateur gardening. The April issue is the **Spring Planting Number** and has many suggestions that will help in making the garden a success. The May **Small House Number** contains many suggestions for summer and for building houses of small cost. June is the **Big Vacation Number,** and is followed by the splendid **Automobile Number** for July. The August issue is the **Mid-summer Number.**

These six issues form a remarkable combination, and any one of them is really worth $1.00. We give them all to you for that amount.

FEATURE ARTICLES FROM RECENT ISSUES

"Successful Flower and Vegetable Planting Tables"; "The Best Vines for the Suburban Grounds"; "A Motor Car Vacation"; "In Old-fashioned Gardens"; "Little-Cost Houses with Individuality"; "An All-the-year House in a Resort Town"; "How We Built Our Bungalow"; "The Necessity of Caring for the Home Exterior"; "Fresh Air and Free for Boys and Girls"; "The New Spring Styles in Wall Coverings"; "The Out-of-the-Ordinary Boys' Camp"; "The Joy of Owning a Dog"; "The Home Beautiful"; "A Talk about Your Floors"; "Houses Adapted for Hill-sides"; "Two and a Tent."

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SIGN BELOW, TEAR OFF, AND MAIL TODAY

THE SUBURBAN PRESS, 334 Fourth Avenue, New York City
Gentlemen: For the enclosed $1.00 (in Canada $1.25), you are to enter my subscription for SUBURBAN LIFE MAGAZINE for six months, beginning with the March Annual Garden Number.

Name_____

Address_____

The New Roberts Racing Motor

(*Continued from page* 534)

final result. In the accompanying illustration it will be noticed that there is no complicated water circulation system and gas intake. These are both integral parts of the crank-case. The water circulates through a passage in the case, up through a passage in the cylinder, and leaves by means of a manifold at the top. The gas intake is controlled through a tubular rotary distributor. This gives the even distribution of gas so difficult to obtain in a six-cyl. two-cycle motor. It is estimated that with this intake and water circulating system, the saving in weight is approximately 33 lbs.

One of the most interesting features of this design is the crankshaft. It is impossible, by even the most careful change in material specifications, to appreciably reduce the weight of a solid crankshaft without seriously reducing its strength. A hollow crankshaft of special carbon steel and of generous diameter is employed, thereby reducing the weight to a minimum without in any way detracting from its strength.

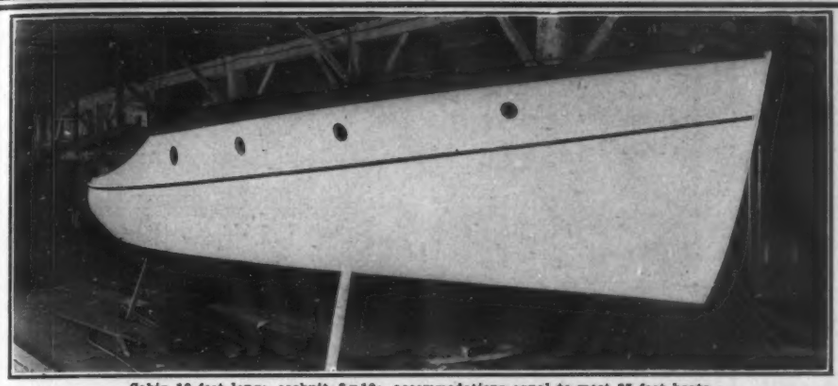
In this motor the crankshaft is 3½ inches in diameter and crankpin 2½ inches. These dimensions are excessive for a 5½ x 6 motor developing its maximum power at 1,200 r.p.m. The strength is maintained by this excessive diameter and the comparatively thin wall may be used without endangering the amount of torque which is to be sustained.

The Roberts Motor Company build two additional sizes of precisely the same design as the motor herewith illustrated. A four-cyl., 4½x5, weighing 195 lbs. complete with carburetor, magneto, spark plugs, grease cups and flywheel, produces 50 H. P. at 1,250 r.p.m. The six-cyl., 4½x5, with the same equipment, weighs 270 lbs., and produces 75 H. P. at the same speed. This type of motor is an extremely light one, but by the means of this alloy, "Aerolite," the makers say they are enabled to produce all of their standard marine types in these special Aerolite types without a change in design.

The four-cyl. "Twenty," with cast iron base, exhaust and intake manifold, brass carburetor and grease cups, weighs 405 lbs. The Aerolite model, built with aluminum base and exhaust and intake manifolds, Aerolite cylinders and light flywheel, weighs 210 lbs.

It will thus be seen that by a substitution of material, these Aerolite models are made with precisely the same patterns as the standard types, with the weight cut in half. This brings a lightweight motor well within the reach of a modest purse. Semi-speed runabouts are increased in seating capacity for the reason that the lighter motor may be placed further forward without holding the bow of the boat down. More powerful dinghies and runabouts may be swung from the davits of a cruiser and there are a multitude of advantages in a light-weight motor of standard design.

The Roberts Motor Company advise us that their sales on these motors have far exceeded their expectations. Already a number of other manufacturers have endeavored to secure this alloy for use in cylinders which is proof that competitive manufacturers have faith in it.



Cabin 18 feet long; cockpit, 8 x 10; accommodations equal to most 35-foot boats.
Completed Hulls, $700; with 12 H. P. Engine and Reverse Gear, $1100. Knockdown frames for this boat also sold.

DALE—30

This elegant boat, 30' x 8' 4" x 2' 6", with toilet, lockers, ice box, clothes closet, oilskin locker, dish closet. Running water to sink and lavatory. All woodwork paneled. Our workmanship and material are of the best quality. Construction is of medium weight with heavy keel.
Skylights, hatchways, bulkheads, doors, and all boat woodwork made to sketch.

12-FOOT SKIFF OR DINGHY—All lumber for same cut and machined, moulds, plan and directions for $9.00. An amateur can build it. Boat complete, $16.00.

Weighs 125 pounds

Send for Circular

WM. L. DALE, 121 River Avenue, Bronx, N. Y.

SPLITDORF
MAGNETO

"Always There"

C. F. SPLITDORF

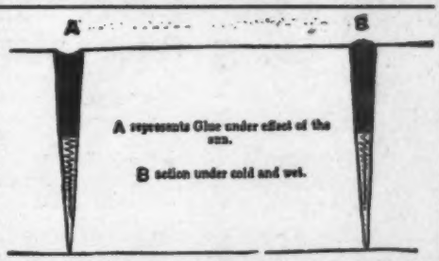
Walton Ave. and 138th St., NEW YORK

CHICAGO BOSTON LOS ANGELES
DETROIT KANSAS CITY SAN FRANCISCO

Application of Marine Glue to Decks

THE reduced Section of Deck (see cut) shows the Glue in seams when the planks are under expansion and contraction. The flexibility of the Glue is one of the most valuable qualities, as it allows the timbers to contract and expand, still retaining its great adhesive power to the edges of the plank.

When the planks become contracted by the heat, a draught takes place on the Glue, and the seam becomes expanded as shown at A. When the planks are swollen by rains and there is a pressure on the Glue, the seam becomes contracted, as shown at B. As the temperature varies, these forms, A and B, continue to assume each other's shapes year after year. **It does not stick to the feet in hot weather.** 14 lbs. Jeffery's Extra Quality Marine Yacht Glue will run from 200 to 250 ft. of seam ¾ in. deep by ¼ in. wide. Properly used and not over heated it will last 4 to 6 years in a seam, and has been known to last 10 to 12 years. When carefully applied to a dry deck, it will never leave the sides of the seam



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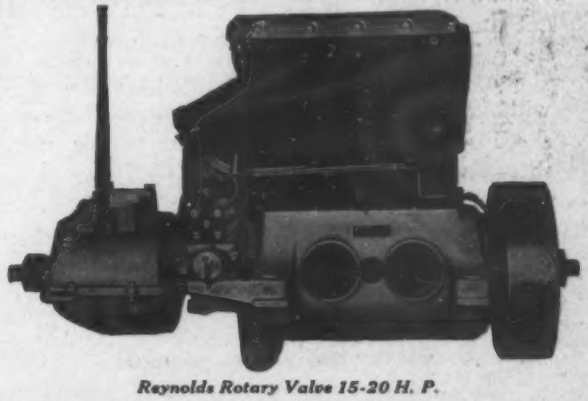

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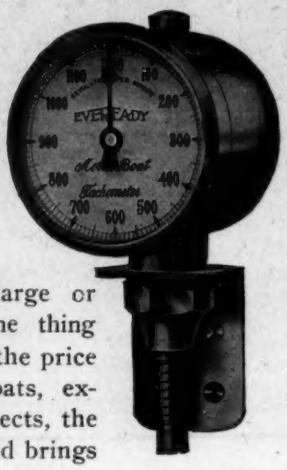

¶ In buying a boat—large or small—fast or slow—one thing that always enters into the price is—speed. Of two boats, exactly alike in other respects, the one with the better speed brings the higher price.

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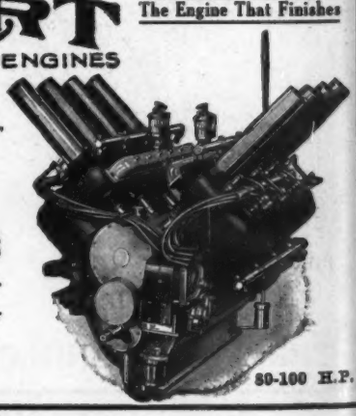

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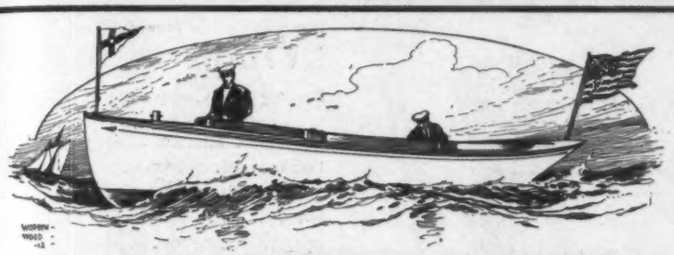

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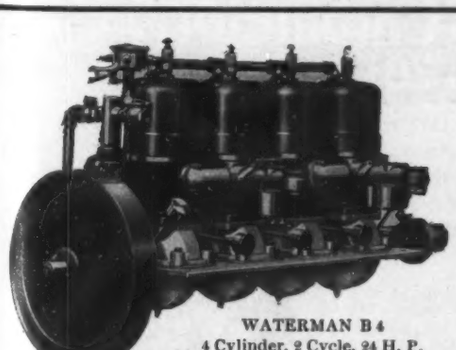

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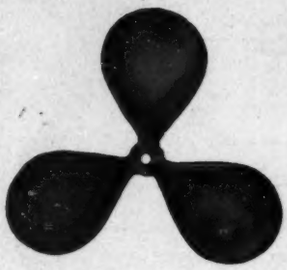

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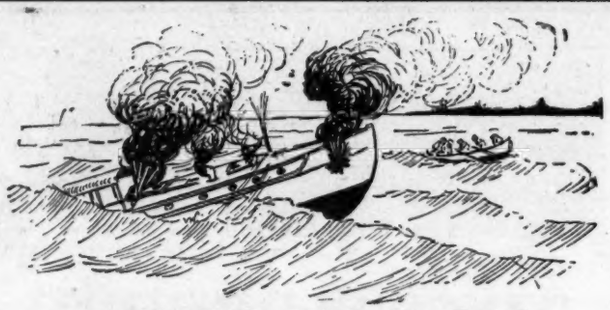

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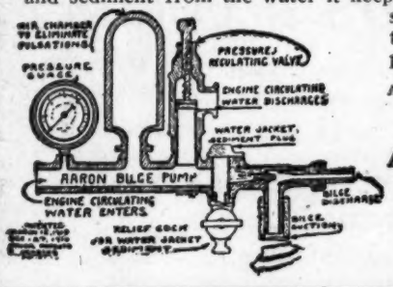

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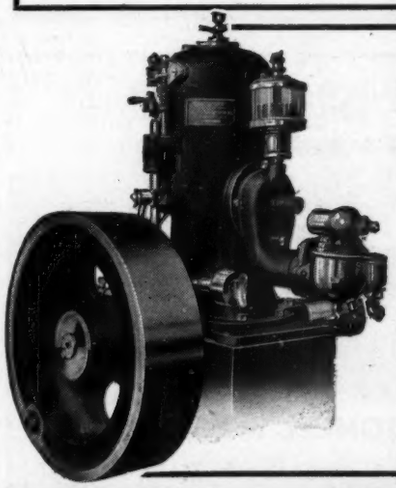

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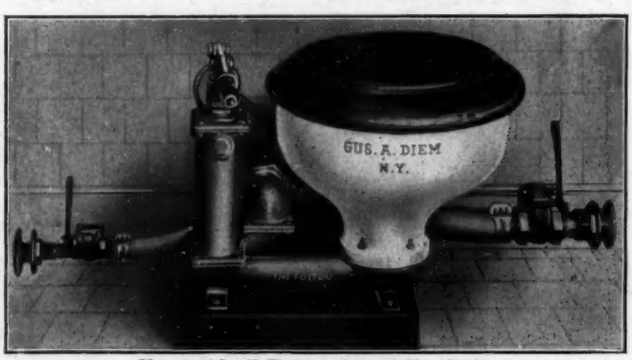

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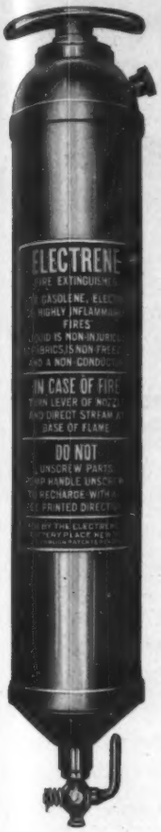

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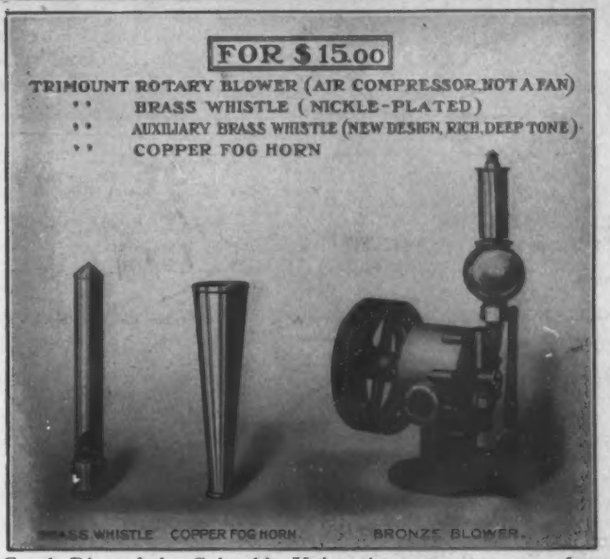
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Marine Engines

Am. Engine Co. 539
Buffalo Gasolene Motor Co. 548
Caille Perfection Motor Co. ..... 3d cover
Camden Anchor-Rockland Machine Co. 527
Eagle Co., The 529
Elbridge Eng. Co. 539
Elco—The Electric Launch Co. ..... 2d cover
Evinrude Motor Co. 537
Gasoline Engine Equipment Co. 473
Gas Engine & Power Co. & Chas. L. Seabury Co. 527
Gray Motor Co. 476
Gray & Prior Machine Co. 544
Palmer Bros. 538
Reynolds Motor Co. 541
Rice Bros.' Co. 540
Roberts Motor Co. ..... 2d cover
Royal Engine Co. 536
Scripps Motor Co. 537
Sterling Engine Co. 548
Trebert Eng. Co., H. L. F. 542
Van Blerck Motor Co. 534
Vim Motor Co. 536
Waterman Marine Motor Co. 543

Miscellaneous

Batjer & Co. 534
Boucher Mfg. Co., H. E. 543
Geuder-Paeschke & Grey 538
Hamburg-Am. Line 474
Hunter Baltimore Rye 534
Insurance Co. of No. America 521
Standard Oil Co. 523

Motor Boats, Dories, Etc.

Aquaplane Co. 545
Atlantic Co. 543
Bonney, John C. G. 534
Breese & Breese 546
Cleveland Auto Boat Mfg. Co. 536
Dale, Wm. L. 541
Davis Boat Works Co. 536

Motor Boats, Dories, Etc. *(Continued.)*

Elco—The Electric Launch Co. ..... 2d cover
Gas Engine & Power Co. & Chas. L. Seabury Co. 527
Mathis Yacht Bldg. Co. 529
Michigan Steel Boat Co. 536
Milton Boat Works 540
Rice Bros. Co. 537

Motor and Sail Boat Accessories, Etc.

Aaron Automatic Bilge Pump Co. 544
American Ever Ready Co. 542
Biddle Hardware Co. 536
Carpenter & Co., Geo. B. 533
Dayton Electrical Mfg. Co. 536
Diem, Gus A. 544
Durkee & Co., C. D. 531
Electrene Co. 545
Ferdinand & Co., L. W. 541
Fogg, M. W. 538
Ignition Starter Co. ..... Back cover
Janney, Steinmetz & Co. 540
Koven & Bro., L. O. 538
Krice Carbureter Co. 544
Michigan Wheel Co. 536
New York Gear Works 538
Pneumatic Mfg. Co. 536
Pyrene Mfg. Co. 529
Splitdorf, C. F. 541
Stamford Foundry Co. 527
Stewart & Clark Mfg. Co. 531
Three-In-One Oil Co. 533
Thomaston Knife Co. 546
Tiebout, W. & J. 542
Trimount Rotary Power Co. 545
Trafton, F. M. 546
Tucker & Carter Rope Co. 531
Waltham Watch Co. 525
Wicker Kraft Co. 538
Wilcox Crittenden Co. 544

Paints and Varnishes

Boston Varnish Co. 536
Henke Mfg. Co. 535
Stearns & McKay Mfg. Co. 540
Valentine & Co. 519

Propellers and Steering Gears

Biddle Hardware Co. 536
Columbian Brass Foundry 542
Edson Mfg. Co. 535
Hyde Windlass Co. 544
McFarland-Fdry. & Machine Co. 543
Michigan Wheel Co. 536
Noyes Machine Co. 542
Shaw Propeller Co. 535

Publications

Outing Books 473, 541
Suburban Life 540
Rod and Gun in Canada 540

Sails and Sail Makers

Boston Yarn Co. 533
Curtin, Inc., John 539
Griffin, Wm. H. 534
Robinson Co., G. W. 535
Wilson & Silsby 534

Second Hand Boats

Cox & Stevens 471
Gielow & Orr 469
Hollis Burgess Yacht Agency 473
Jones, F. Bowne 472
Seaman, Stanley M. 473
Tams, Lemoine & Crane 470

Yacht Brokers and Naval Architects

Alden, John G. 473
Barney, Morgan 472
Binney, Arthur 473
Bowes & Mower 472
Bruns, Kimball & Co. 473
Cox & Stevens 472
Gielow & Orr 473
Jennings Yacht Brokerage Co. 473
Jones, Frank Bowne 473
Seaman, Stanley M. 473
Tams, Lemoine & Crane 470
Watts, J. Murray 473

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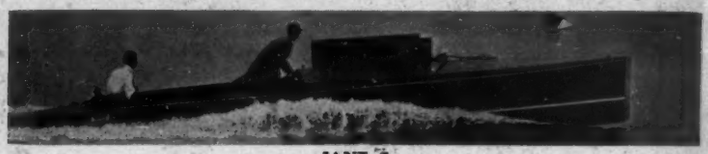

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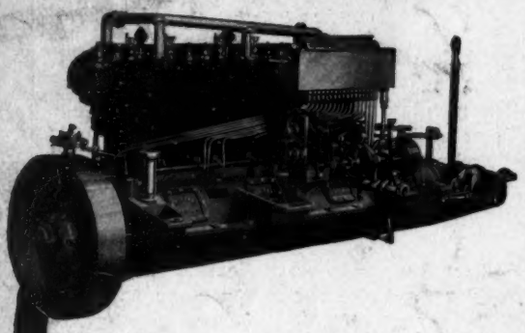

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